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February 23, 2007

Mr. Kyrik Rombough
Air Quality Program
South Dakota Department of Environment
and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

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PROGRAM**

Dear Mr. Rombough:

Subject: Prevention of Significant Deterioration Construction Permit Application
Big Stone II - Update

The purpose of this letter and accompanying enclosures is to update the Big Stone II Prevention of Significant Deterioration Construction Permit Application Updated June 2006 (the Application) to reflect recent site design refinements. This submittal also incorporates PM 2.5 modeling results that are consistent with EPA's National Ambient Air Quality Standards for Particulate Matter which were revised since the submittal of the permit application.(71 FR 61144, October 17, 2006).

Facility Design Refinements

Unit Net Electrical Capacity

The Application refers to the Big Stone II boiler as a nominal 600 MW net pulverized boiler in several locations in the body of the Application and in its appendices. As a result of the more detailed design, the nominal net capacity is expected to be 630 MW. The increased capacity is the result of increased steam cycle efficiency improvements that were incorporated into the design. The design heat input has not increased and it remains at 6,000 mmBtu per hour.

Emissions Units Eliminated

The design refinements eliminated the coal silos and as a result of that decision the following Unit ID's emissions points were eliminated as referenced in the enclosed table that accompanied the Application.

Unit ID	Description
18	Yard Silo Fill System
19	Yard Silo Loadout System
32	Coal Yard Transfer System

Mr. Kyrik Rombough

February 23, 2007

Page 2

Emissions Units Added

The design refinement added two new emission points, a lime storage silo and a soda ash storage silo. The lime and soda ash will be used for water treatment.

Unit ID	Description
34	Pretreatment Soda Ash Bin Vent
35	Pretreatment Lime Bin Vent

Emissions Sources Relocated

The refinement resulted in the relocation of the following Unit ID emission sources.

- Cooling tower (Unit ID 16)
- Reclaim Hopper (Unit ID 17)
- Limestone Day Bin Vent (Unit ID 24)
- Coal handling diesel fire pump (Unit ID 33)
- Portions of the haul roads

Use of Passive Dust Control Design

The passive dust control system design methodology incorporates bulk material flow control and air control. The design helps reduce the amount of induced airflow and the generation of fines in the materials handling transfer system. As an end result materials handling dust can be effectively controlled with significantly reduced discharge airflow as compared to more traditional emission control design. Otter Tail has successfully used this design at a number of materials handling emissions points at its Coyote Station. The passive duct control system design, which reflect the reduced discharge airflow, has been incorporated into the following materials handling particulate emissions control Unit ID's.

Unit ID	Description
17	Emergency Coal Reclaim System
20	Limestone Reclaim System
21	Limestone Receiving System
22	Coal Tripper/Silo Fill System
26	Coal Plant Transfer System
27	Coal Crusher Building
30	Coal Stockout System

Supporting Enclosures

Enclosed is a revised process flow diagram for the Coal Handling (Drawing No. 060616-00), and a revised process flow diagram for the Limestone Receiving, Storage and Reclaim (Drawing No. 060616-01). The Coal Handling process flow diagram has been updated to reflect the revised design. Note that the size of the active coal pile has been reduced from 75,000 tons to 28,800 tons. The Limestone Receiving, Storage and Reclaim drawing has been revised to correct the designation of Unit ID 28 to Unit ID 29. Please replace the corresponding drawings ins Section 2 of the updated June 2006 Application with the enclosed drawings.

Mr. Kyrik Rombough
February 23, 2007
Page 3

Also enclosed are revised Appendix A application forms that incorporate the described changes. Please remove Appendix A from the updated June 2006 Application and replace Appendix A in its entirety. We recognize that Unit ID's are no longer in sequential order, but we would prefer that the Unit ID's remain as designated in order to maintain consistency with the ambient air quality model data inputs.

Finally, enclosed are replacement site arrangement drawings for Appendix B of the updated June 2006 Application.

PM2.5 NAAQS Modeling

Burns and McDonnell completed air quality impacts modeling of CO, PM10 and PM2.5 emissions which are described in the enclosed revised permit application Section 6, Section 7 and Appendix C. The modeling protocol has been revised to reflect the redesign as described above and as described in the revised Section 6. Burns & McDonnell will forward the electronic copies of the modeling files to you.

Please note that Big Stone II is proposing to duct the existing rotary car dumper emissions (Unit ID's 7a, 7ab, 7c, and 7d) into a one common stack with a height of 150 feet with no rain cap and a grain loading of 0.01 gr/dscf. Big Stone II is also evaluating the viability of the following control technology options and would plan to implement one of these options in lieu of the increased stack height if the controls are constructible, technically and economically feasible, and the ambient air quality impacts are equal to or less than the increase in stack height.

Option #1-Remove the existing collection equipment and replace it with a fogging system possibly incorporating applicable passive control design that may be applicable to the dumper operation. This would eliminate the emission point. Fogging has been used in similar applications but there are concerns about effectiveness and icing during below freezing conditions during extended periods of time.


Option #2-Modify the dumper area and recalculate 75% of the existing collectors discharge back into the dumper building. The balance of the discharge would flow to a new, common 50-foot stack.

Option #3-Installation of a wet particulate scrubber on the discharge of the collection system/systems. In order for this option to be in consideration the vendor would need to guarantee a discharge better than the bag manufacturer's guarantee of 0.01 gr/dscf.

We plan to complete the evaluation prior to final design and will submit modeling showing that the selected option will have no greater ambient air quality impact than the enclosed modeling results.

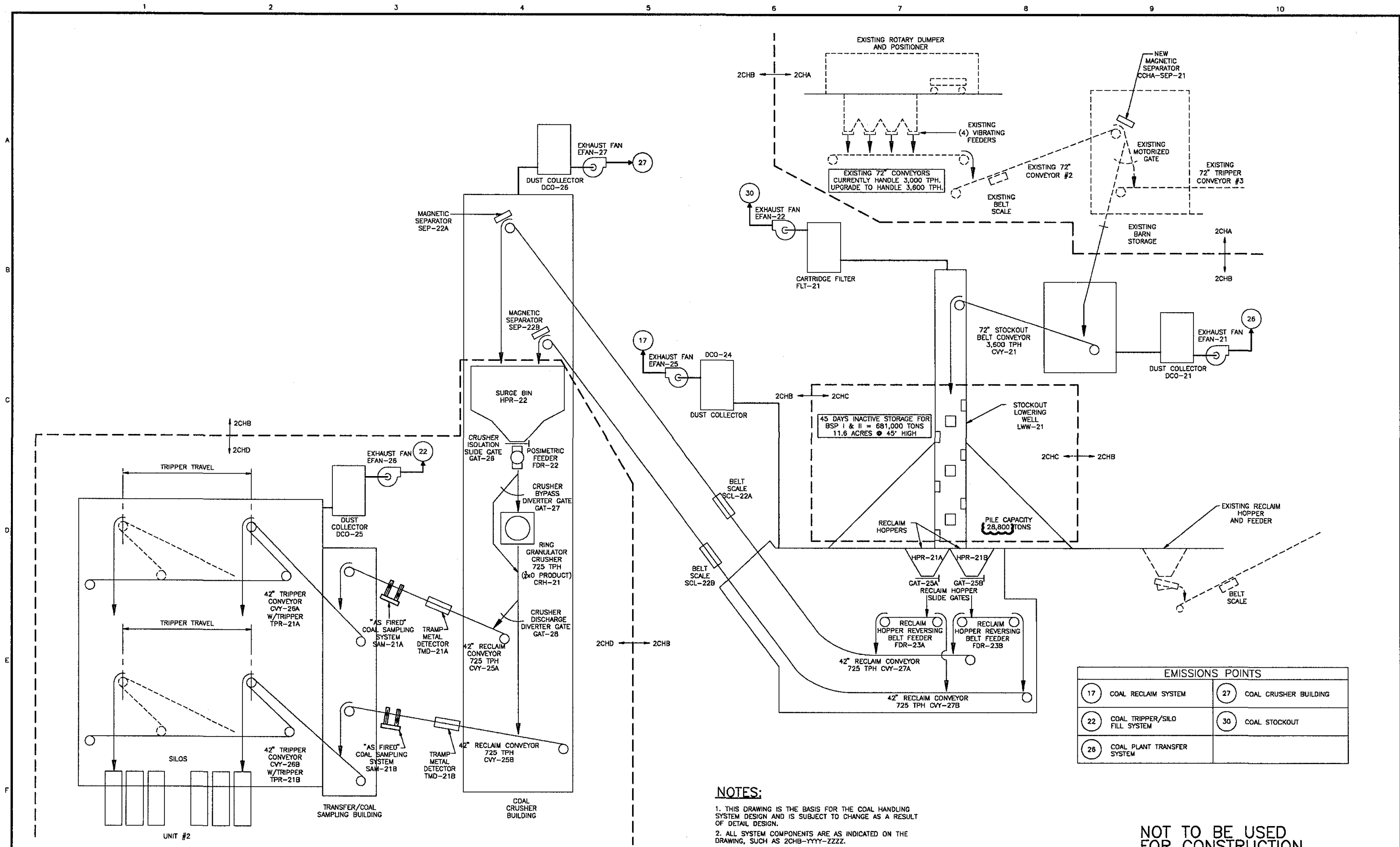
Should you have any questions, please contact me at 218-739-8407.

Sincerely,



Terry Graumann
Manager, Environmental Services

Enclosures



NOTES:

1. THIS DRAWING IS THE BASIS FOR THE COAL HANDLING SYSTEM DESIGN AND IS SUBJECT TO CHANGE AS A RESULT OF DETAIL DESIGN.
2. ALL SYSTEM COMPONENTS ARE AS INDICATED ON THE DRAWING, SUCH AS 2CHB-YYYY-ZZZZ.

EMISSIONS POINTS			
17	COAL RECLAIM SYSTEM	27	COAL CRUSHER BUILDING
22	COAL TRIPPER/SILO FILL SYSTEM	30	COAL STOCKOUT
26	COAL PLANT TRANSFER SYSTEM		

NOT TO BE USED
FOR CONSTRUCTION

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06/16/06 13:19:32

ACAD 15.05 D1 1=1		I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF SOUTH DAKOTA		BLACK & VEATCH CORPORATION		BIG STONE II CO-OWNERS BIG STONE II POWER PLANT		PROJECT 142662-SS-060616-00		DRAWING NUMBER 1	
NO		DATE		SIGNED		ENGINEER		CODE		AREA	
1		01/16/2007		GENERAL REVISIONS		VLM		PROCESS FLOW DIAGRAM - PERMITTING		COAL HANDLING	
0		06/16/06		INITIAL ISSUE		SJR					
				REVISIONS AND RECORD OF ISSUE		DATE					

6.0 AIR DISPERSION MODELING

Since this project is subject to PSD review, an air dispersion modeling analysis is required for each pollutant subject to 40 CFR Part 52.21. According to the emission estimates for this project, CO and PM₁₀ are subject to PSD review, and an air quality analysis was performed for each. Since VOCs are photoreactive pollutants and are generally regional in nature in terms of their contribution to ozone formation, no reactive-pollutant modeling of VOCs was conducted. In addition, Big Stone II requests that a pre-construction ambient ozone monitoring study not be required since potential VOC emissions are expected to be less than 100 tpy.

The results of the modeling indicate that the impacts of CO from Big Stone II will not result in a significant impact at any location. According to the draft "New Source Review Workshop Manual," no further modeling is required for a PSD applicant if the modeled impacts are below the significance levels. However, the modeling analyses show that Big Stone II's emissions exceed the PSD *de minimis* modeling significance thresholds for PM₁₀. A refined modeling analysis will be conducted for the annual PM₁₀ averaging period and the 24-hour PM₁₀ averaging period to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS) and PSD Class II Increments. Additionally, a modeling analysis will be conducted for the annual PM_{2.5} averaging period and the 24-hour PM_{2.5} averaging period to demonstrate compliance with the NAAQS.

6.1 Air Dispersion Model

Air dispersion modeling was performed using the most current version of the AMS/EPA Regulatory Model (AERMOD) for the air quality analysis (Version 07026). The AERMOD is an EPA-approved, steady state Gaussian plume model capable of modeling multiple sources in simple and complex terrain. AERMOD is the model currently approved for industrial sources and PSD permits.

The following default model options were used:

- Gradual Plume Rise
- Stack-tip Downwash
- Buoyancy-induced Dispersion
- Calms and Missing Data Processing Routine
- Calculate Wind Profiles
- Calculate Vertical Potential Temperature Gradient
- Rural Dispersion

Details of the modeling algorithms contained in the AERMOD may be found in the User's Guide for AERMOD. The regulatory default option will be selected for this analysis since this project meets the USEPA guideline requirements.

6.2 Model Stack Parameters

6.2.1 Big Stone II

Modeling runs were conducted confirm that operation of Big Stone II will not result in impacts greater than the NAAQS or PSD increments. The stack parameters used in the analysis are given in Table 6-1. Emission rates for each of the pollutants at each operating load are given in Table 6-2.

Table 6-1: Big Stone II – Boiler Stack Parameters

Stack Height	Stack Diameter	Exit Velocity (ft/s)		Stack Temp. (°F)	
		Boiler 2 Only	Both Boilers	Boiler 2 Only	Both Boilers
498 ft	34 ft	33.89	63.57	136	137

Table 6-2: Boiler Potential Emission Rates

Pollutant	Capacity Emissions (lb/hr)	
	Boiler 2 Only	Both Boilers
CO	900.00	1,358.20
PM ₁₀	180.00	1,688.00

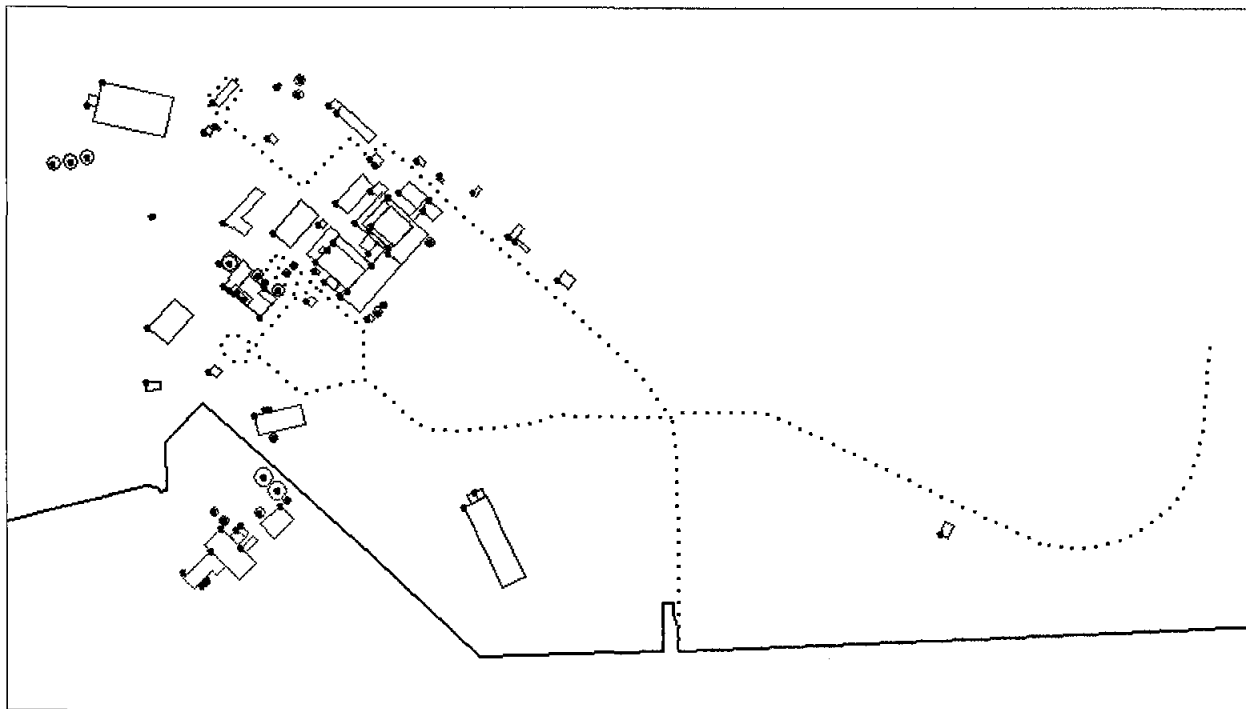
All emissions were modeled to correspond to their BACT emission levels.

6.2.2 Haul Roads

All haul roads will be paved as part of the Big Stone II project. Paved roads will be swept and/or wetted with water or another dust suppression agent as needed to control fugitive dust. Paved road emission factors were used to calculate the emissions from all haul road segments with a 50% control efficiency factor to account for the fugitive dust controls. Figure 6-1 shows the road layouts.

Annual usage of haul roads is calculated as the maximum expected annual material tonnage plus 20% margin as noted in Appendix C.

Figure 6-1: Facility Haul Roads



6.3 Good Engineering Practice

Sources included in a modeling analysis at a PSD major facility are subject to Good Engineering Practice (GEP) stack height requirements outlined in 40 CFR Part 51, Sections 51.100 and 51.118. As defined by the regulations, GEP height is calculated as the greater of 65 meters (measured from the ground level elevation at the base of the stack) or the height resulting from the following formula:

$$\text{GEP} = H + 1.5L$$

Where,

H = the building height; and

L = the lesser of the building height or the greatest crosswind distance of the building - also known as maximum projected width.

To meet stack height requirements, the proposed point sources will be evaluated in terms of their proximity to nearby structures. The purpose of this evaluation is to determine if the discharge from each stack will become caught in the turbulent wake of a building or other structure, resulting in downwash of the plume. Downwash of the plume can result in elevated ground-level concentrations. EPA provides guidance for determining whether building downwash will occur in *Guideline for Determination of Good*

Engineering Practice Stack Height (EPA, 1985). The downwash analysis will be performed consistent with the methods prescribed in this guidance document. The generation facility and associated point sources will be evaluated in terms of their proximity to nearby structures.

Calculations for determining the direction-specific downwash parameters will be performed using the most current version of the EPA's Building Profile Input Program – Plume Rise Model Enhancements, otherwise referred to as the BPIP-PRIME downwash algorithm.

Every stack, including dust collectors and diesels, has been evaluated for GEP stack height compliance. This data is found in Appendix G on the CD-ROM in the file entitled 070216run6.SUM.

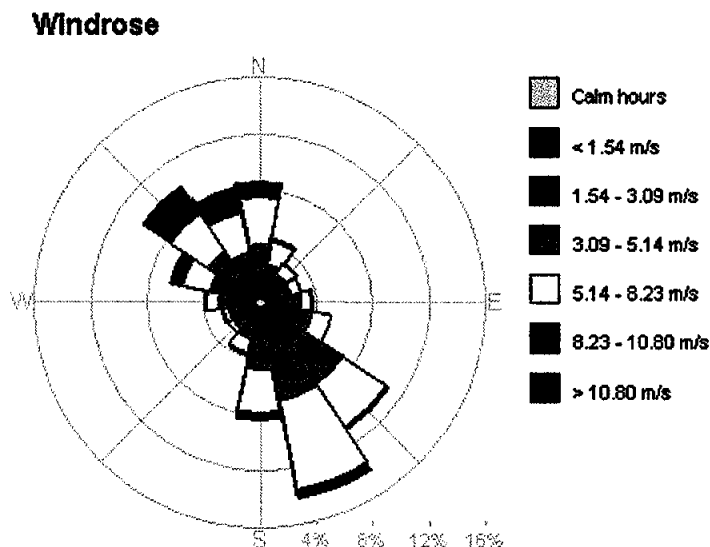
6.4 Receptor Grid

The overall purpose of the modeling analysis is to ensure that operation of the proposed facility will not result in, or contribute to concentrations above the National Ambient Air Quality Standards (NAAQS) or PSD Class II increments. The modeling runs were conducted using the AERMOD model in simple terrain within a 7 by 4.5 kilometer Cartesian grid to determine the impacts for each pollutant. The grid incorporated the 100-meter spacing between receptors. Additionally, receptors were placed along the property boundary at a spacing of 50 meters. After reviewing the topography of the area, it was determined that terrain elevations should be incorporated into the model. Therefore, the appropriate United States Geological Survey (USGS) 7.5 minute topographical maps (from electronic DEM data) were used to obtain the necessary receptor elevations.

6.5 Meteorological Data

Surface air meteorological data from Huron, SD (14936) with Aberdeen, SD (14929) upper air data from 2001-2005 was used in the analysis. The profile base elevation is 390.1 meters. The dominant wind direction is shown in Figure 6-2. The raw data had missing values for a five hour period on February 9, 2002 (hours 13 through 17). These values were filled in using data from the same time period from Mitchell, SD.

Figure 6-2: Big Stone Power Plant Windrose



6.6 Rural Dispersion Coefficients

Based on the Auer scheme, the existing land use for a three-kilometer area surrounding the proposed site is more than 50 percent rural. The population density is also less than 750 people/km² for the same area. Rural coefficients are appropriate for the Big Stone II area. Therefore, rural dispersion coefficients were used in the AERMOD Model.

6.7 Significant Impact Area Determination

The AERMOD model was run for the proposed facility using the worst-case capacity scenario for the coal-fired boiler. If any modeled pollutant results in an impact below the significance levels for each averaging period, no further modeling for that pollutant to determine compliance with the NAAQS or PSD Class II increments is needed. However, if the model predicts impacts at or above the modeling significance level for any pollutant, a cumulative analysis including all point sources within the radius of impact (ROI) will be required for that pollutant. Based on the initial modeling results, Big Stone requested from DENR an emission inventory of PSD increment-consuming sources and NAAQS sources that are located within the ROI and should be included in the modeling analyses.

6.8 NAAQS and Class II Increment Analysis

For the NAAQS and PSD increment analysis, all major stationary sources that emit pollutants subject to this analysis and located within 50 kilometers of the ROI were addressed. A source within 50 kilometers of the impact area may be eliminated from the analysis if it is determined to have a negligible contribution to air quality impacts at the generating station. Big Stone consulted with the DENR to determine

acceptable methods of eliminating sources from the analysis. Background air quality values for Grant County are available from the DENR to add to model-predicted concentrations for comparison to the NAAQS and are shown in Table 6-3. If the refined analysis does not result in any concentrations above the NAAQS or PSD increments, no further modeling will be conducted.

Table 6-3: Background Levels ($\mu\text{g}/\text{m}^3$)

PM₁₀ 24 Hr	PM_{2.5} 24 Hr	PM_{2.5} Annual
32	17	8

6.9 Ambient Monitoring

The modeling analysis for emission sources at the proposed Big Stone facility also addressed the pre-construction monitoring provision of the PSD regulations. The regulations specify significant monitoring levels for each PSD pollutant that triggers the requirement to perform one year of pre-construction ambient air monitoring. For any impacts predicted to be below the monitoring significance levels, Big Stone will request an exemption from pre-construction ambient air monitoring. If any predicted concentrations reaching or exceeding the monitoring *de minimis* levels are observed, Big Stone will consult with the DENR to determine if pre-construction ambient air monitoring will be required. If so, Big Stone will request local ambient monitoring data to fulfill the pre-construction monitoring provisions of the PSD regulations or develop an acceptable monitoring plan. Table 6-4 shows the NAAQS, modeling/monitoring significance levels, and PSD increments.¹

Table 6-4: NAAQS, Significance Levels and Class I and II Increments ($\mu\text{g}/\text{m}^3$)

Pollutant	Averaging Period	NAAQS	Modeling Significance Level	Monitoring Significance Level	PSD Class II Increments
CO	8-hour	10,000	500	575	NA
	1-hour	40,000	2,000	NA	NA
PM ₁₀	Annual	50	1	NA	17
	24-hour	NA	5	10	30
PM _{2.5}	Annual	15	NA	NA	NA
	24-hour	35	NA	NA	NA

¹ The pollutants that are allowed one NAAQS exceedance per year and one PSD Increment exceedance per year are: 1-hour and 8-hour CO and 24-hour PM/PM₁₀.

6.10 Screening Model Results

After examining the modeling results at all load levels, it was determined that exceedances of the annual modeling significance level occurred, and that refined modeling would be required. All predicted impacts were lower than the ambient air monitoring *de minimis* level and no pre-construction monitoring was required. The maximum modeled concentrations are given in Table 6-5. The model input and output files are provided on CD-ROM in Appendix G.

Table 6-5: Screening Level Maximum Modeled Concentrations

Pollutant	Averaging Period	UTM Coordinates (meters)		Year	Predicted Concentration ($\mu\text{g}/\text{m}^3$)	Modeling/ Monitoring Significance Level ($\mu\text{g}/\text{m}^3$)
		Easting	Northing			
CO	1-hour	695200.00	5018800.00	2002	495.82	2,000
	8-hour	695200.00	5018800.00	2005	301.34	500/575

6.11 PM₁₀ NAAQS Modeling Results

After examining the modeling results, it was determined that Big Stone II will not cause the NAAQS to be exceeded at any point where the facility will have a significant impact. Table 6-6 lists the results from the NAAQS analysis.

Table 6-6: PM₁₀ NAAQS Modeling Results ($\mu\text{g}/\text{m}^3$)

Averaging Period	NAAQS	Maximum Modeled Impact				Background Concentration	Total Concentration
		Easting	Northing	Year	Concentration		
24-hour	150	695200.00	5018900.00	2005	64.97	32.00	96.97

6.12 PM₁₀ Class II Increment Modeling Results

After examining the modeling results, it was determined that Big Stone II will not cause the PSD Increment to be exceeded at any point where the facility will have a significant impact. Table 6-7 lists the results from the NAAQS analysis.

Table 6-7: PM₁₀ Increment Modeling Results ($\mu\text{g}/\text{m}^3$)

Averaging Period	PSD Increment	Maximum Modeled Impact: All NAAQS Sources			
		Easting	Northing	Year	Concentration
24-hour	30	695063.62	5019008.00	2005	29.76
Annual	17	695074.81	5019022.50	2001	5.03

6.13 Concentration Contour Plot

Per DENR's request, the concentration contour plots for PM₁₀ annual average at 1 µg/m³ is shown in Figure 6-3.

6.14 PM_{2.5} NAAQS Modeling Results

EPA adopted a NAAQS for PM_{2.5} in 1998 but has yet to adopt an implementing rule. In guidance, EPA has indicated that it is appropriate to use PM₁₀ as a surrogate parameter for determining compliance with the PM_{2.5} standard. (Memorandum from John S. Seitz, Director Office of Air Quality Planning and Standards to Regional Air Directors, "Interim Implementation of New Source Review for PM_{2.5}" (October 23, 1997); reconfirmed in Memorandum from Stephen D. Page to Addressees, "Implementation of New Source Review Requirements in PM_{2.5} Non-attainment Areas" (April 5, 2005)). To address questions raised in public comments, the application included modeling for PM_{2.5} using the following conservative assumptions:

- All PM₁₀ emissions from stacks were assumed to be equal to PM_{2.5}
- Emissions from drop points were recalculated using the k factor for PM_{2.5} from AP-42 section 13.2.4. ($k_{2.5} = 0.053$)
- Emissions from paved haul roads were recalculated using the k and c factors for PM_{2.5} from AP-42 section 13.2.1. ($k_{2.5} = 0.0024$)
- Emissions from unpaved haul roads (pile maintenance) were recalculated using the k factor for PM_{2.5} from AP-42 section 13.2.2. ($k_{2.5} = 0.15$)
- Emissions from storage pile wind erosion were recalculated using the k factor for PM_{2.5} from AP-42 section 13.2.5. ($k_{2.5} = 0.075$)

After examining the modeling results, it was determined that Big Stone II will not cause the PM_{2.5} NAAQS to be exceeded at any point where the facility will have a significant impact. Table 6-8 provides a summary of the results from the PM_{2.5} NAAQS analysis. The resulting total concentrations modeled plus background are below the applicable NAAQS for PM_{2.5}.

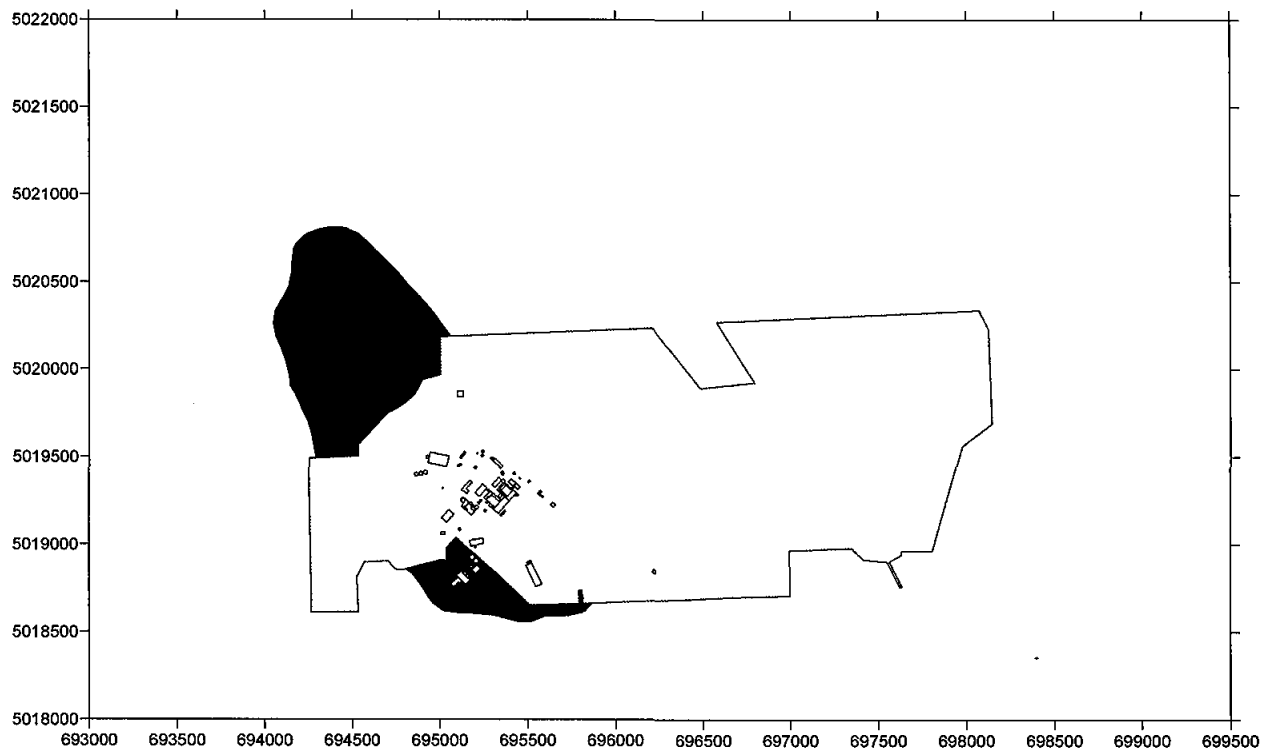
Table 6-8: PM_{2.5} NAAQS Modeling Results (µg/m³)

Averaging Period	NAAQS	Maximum Modeled Impact: All NAAQS Sources				Background Concentration	Total Concentration
		Easting	Northing	Year	Concentration		
24-hour	35	695034.62	5018977.00	2002	17.18	17.00	34.18
Annual	15	695074.81	5019022.50	2004	5.31	8.00	13.31

6.15 Conclusion

The dispersion modeling predicts that there will be no exceedances of the Increment and NAAQS thresholds. The operation of the Big Stone II Project will not cause or contribute to a significant degradation of ambient air quality. After examining the results of the model, it has been determined that the PSD modeling requirements for CO and PM₁₀ have been met and no further modeling is required.

Figure 6-3: PM₁₀ Increment Annual Average (1 µg/m³)



7.0 ADDITIONAL IMPACTS

The additional impacts analysis requirement under PSD assesses the ambient air quality impact analysis, soils and vegetation impacts, visibility impairment, and growth analysis for the project.

7.1 Construction Impacts

Construction of Big Stone II has the potential for short-term adverse effects on air quality in the immediate area around the site. Diesel fumes from construction vehicles and dust from site preparation and construction vehicle operation can affect local air quality during certain meteorological conditions. However, these instances are limited in time and area of effect.

The Grant County area is in attainment or is unclassified for all criteria pollutants. Operation of construction vehicles is not expected to significantly affect ambient air quality. During dry periods, fugitive dust will be minimized through the application of water to on-site roads used by construction equipment.

7.2 Vegetation Impacts

Vegetation in the region of eastern South Dakota and western Minnesota was historically dominated by tallgrass prairie in an area referred to as the Prairie Parkland Region². Glaciation left this area with a mosaic of rolling glacial till uplands and pothole depressions. In areas that haven't been developed or converted to cropland, tallgrass prairie dominates the drier, exposed upland areas and commonly consists of big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*), little bluestem (*Schizachyrium scoparium*), switchgrass (*Panicum virgatum*), prairie dropseed (*Sporobolus heterolepis*), and porcupine grass (*Hesperostipa spartea*). Areas that are more protected from dry, hot conditions by moisture or east- to north-facing slopes more commonly consist of savannas, woodlands or forests dominated by oaks (*Quercus* spp.), eastern cottonwood (*Populus deltoides*), ash (*Fraxinus* spp.), and willows (*Salix* spp.).

The following sections briefly describe the potential effects of NO₂, SO₂, CO, and PM₁₀ produced by Big Stone II on the nearby vegetation. The potential effects of the air emissions to vegetation within the immediate vicinity of the Big Stone Power Plant were compared to scientific research examining the

² Faber-Langendoen 2001

effects of pollution on vegetation. Damage to vegetation often results from acute exposure to pollution, but may also occur after prolonged or chronic exposures. Acute exposures are typically manifested by internal physical damage to leaf tissues, while chronic exposures are more associated with the inhibition of physiological processes such as photosynthesis, carbon allocation, and stomatal functioning.

7.2.1 Sulfur Dioxide

Short- and long-term exposure to sulfur dioxide has been shown to have detrimental effects on many plant species³. Numerous studies have been conducted studying the effects of SO₂ on vegetation including crop plants⁴, trees and shrubs⁵, and herbaceous plants⁶. Symptoms of SO₂ injury in leaves manifest as interveinal necrotic blotches in angiosperms and red brown banding in gymnosperms⁷. A number of the plants studied include those found in the Prairie Parkland Region or are raised for agriculture in the area. Plants include red cedar (*Juniperus virginiana*), oaks, sumacs (*Rhus* spp.), ash, raspberries (*Rubus* spp.), American elm (*Ulmus americana*), red maple (*Acer rubrum*), black willow (*Salix nigra*), bracken fern (*Pteridium aquilinum*), soybean (*Glycine max*), and corn (*Zea mays*). Injury threshold concentrations varied by species and dose (131-5,240 µg/m³ for 8 hours, 393-3,930 µg/m³ for 2 hours, and 1,310 µg/m³ for 4 hours), and were significantly higher than the SO₂ emissions expected to occur near the Big Stone Power Plant. Even lichens and bryophytes, which are pollution bio-indicators due to their well-documented sensitivity to air pollution, would not be affected by long term exposure to SO₂ emissions from Big Stone II. They do not experience injury, decreased abundance, or lowered CO₂ uptake until SO₂ concentrations reach 5 to 40 µg/m³ SO₂⁸, 13 to 26 µg/m³ SO₂⁹, and 400 µg/m³ SO₂¹⁰ annually.

7.2.2 Nitrogen Oxides

During fuel combustion, atmospheric nitrogen is oxidized to nitrogen oxide and small amounts of NO₂¹¹. The NO is photochemically oxidized to NO₂, which is then subsequently consumed during the production of ozone and peroxyacetyl nitrates (PANs). As with SO₂ emission research, NO₂ has been shown to deleteriously impact vegetation¹². Typical leaf injury responses include interveinal necrotic blotches similar to SO₂ injury for angiosperms and red-brown distal necrosis in gymnosperms¹³. Injury threshold concentrations vary by species and dose, but are much higher than that of SO₂ as described above. In

³ See reviews by Heath 1980; Kozłowski and Constantinidou 1986; Darrall 1989

⁴ Guderian and Stratman (1968) in Kozłowski and Constantinidou 1986; Huang et al. 1976; Reinert et al. 1975; Tingey et al. 1971; Darrall 1989

⁵ Linzon 1986; Kozłowski and Constantinidou 1986; Darrall 1989

⁶ Winner and Mooney 1980; Westman et al. 1985; Darrall 1989

⁷ Kozłowski and Constantinidou 1986

⁸ Will-Wolf 1980; Holopainen 1984; McCune 1988; and Treshow and Anderson 1989

⁹ LeBlanc and Rao 1975; Wetmore 1988

¹⁰ Hart et al. 1988

¹¹ Chang 1981

¹² Taylor et al. 1975; Heath 1980; Kozłowski and Constantinidou 1986; and Darrall 1989

¹³ Kozłowski and Constantinidou 1986

general, short term high, concentrations of NO₂ are required for deleterious impacts on plants¹⁴. The injury threshold for two crop plants grown in the region – tomato (*Lycopersicon esculentum*) and annual sunflower (*Helianthus annuus*) – is 4 hours at a concentration of 7,380 µg/m³. A common, weedy plant found throughout the Prairie Parkland Region, lamb's quarters (*Chenopodium album*), was not injured for two hours at concentrations 1.9 ug/m³ NO₂. Furthermore, short term fumigations of approximately 1 hour, 20 hours, and 48 hours at NO₂ concentrations of 940 to 38,000 µg/m³, 470 µg/m³, and 3,000 to 5,000 µg/m³, respectively, have been shown to deter photosynthesis in a number of herbaceous [tomato, oats (*Avena sativa*), alfalfa (*Medicago sativa*)] and woody plants¹⁵. Moreover, Taylor and McLean (1970), in their review of NO₂ effects on vegetation noted that long term exposures of phytotoxic doses of NO₂ ranged from 280 to 560 µg/m³. All the above concentrations are significantly higher than the NO₂ emissions expected to occur near the Big Stone Power Plant.

7.2.3 Synergistic Effects of Pollutants

Air pollutants are known to act in concert to cause injury to or decrease the functioning of plants¹⁶. Synergistic refers to the combined effects of pollutants when they are greater than is expected from the additive effect of the compounds. The inhibitory effects of SO₂ and NO₂¹⁷, NO₂ and NO¹⁸, NO₂ and O₃¹⁹ and O₃ and SO₂²⁰ have been reported in various short-term studies for crop plants (e.g., soybean, broad bean (*Vicia faba*), annual sunflower, and tomato) and various trees that grow in the Prairie Parkland Region [e.g., eastern cottonwood, sugar maple (*Acer saccharum*), ash, and oak]. Concentrations of pollutants (80 to 981 µg/m³) in these studies are substantially higher than concentrations predicted to occur near the Big Stone Power Plant. Consequently, no synergistic effects of the air pollutants are expected to inhibit vegetation at or near the Big Stone Power Plant.

7.2.4 Particulate Matter

Particulates may contain trace elements and heavy metals such as arsenic, boron, beryllium, copper, fluoride, nickel, lead, mercury, manganese, and cobalt²¹. These compounds have been shown to be detrimental to vegetation typically within the immediate vicinity of the source²². The most obvious effect of particle deposition on vegetation is a physical smothering of the leaf surface. This will reduce light

¹² Prinz and Brandt 1985

¹⁵ Hill and Bennett 1970; Capron and Mansfield 1976; and Smith 1981

¹⁶ See reviews of Reinert et al. 1975; Omrod 1982

¹⁷ White et al. 1974; Wright et al. 1986

¹⁸ Capron and Mansfield 1976

¹⁹ Furakawa et al. 1984; Okana et al. 1985

²⁰ Costonis 1970, Carlson 1979; Jensen 1981; Omrod et al. 1981

²¹ Wangen and Turner 1980

²² Woolhouse 1990

transmission to the plant, in turn causing a decrease in photosynthesis²³. However, only small amounts of particulate matter are emitted from power plants. Particulate matter concentrations due to operation of Big Stone II are expected to increase by 2.43 µg/m³. These levels are considered negligible, so it is highly unlikely that particulate matter emissions will impact vegetation adjacent to the Big Stone Power Plant.

7.2.5 Carbon Monoxide

Carbon monoxide is not known to injure plants nor has it been shown to be taken up by plants. Consequently, no adverse impacts to vegetation at or near the Big Stone Power Plant are expected from CO stack emissions.

7.3 Soil Impacts

Eight soil mapping units have been identified at or in the immediate vicinity of the project site²⁴. They include:

- Heimdal-Sisseton loams, 2 to 6 percent slopes (HbB)
- Heimdal-Sisseton loams, 6 to 9 percent slopes (HbC)
- Heimdal-Svea loams, 0 to 2 percent slopes (HcA)
- Heimdal-Svea loams, 2 to 6 percent slopes (HcB)
- Vallery-Tonka complex (Vc)
- Parnell silty clay loam
- Tonka silt loam (Ta)
- Vallery loam

Sulfates and nitrates caused by SO₂ and NO₂ deposition on soil can be beneficial and detrimental to soils depending on their composition. However, given the low emission impacts, Big Stone II should not significantly affect the soils on site or in the immediate vicinity.

7.4 Impacts on Threatened and Endangered Species

The following discussion on threatened and endangered species is based on Barr Engineering's assessment as contained in the South Dakota Energy Conversion Facility Siting Permit Application for Big Stone II.

²³ Meteorological Service of Canada 2002

The U.S. Fish and Wildlife Service has identified three federally listed species that may occur in the project area (USFWS/Gober 2004, September 16, 2004 letter to Jeffrey Lee/Barr Engineering). They are the Bald eagle (*Haliaeetus leucocephalus*), the Topeka shiner (*Notropis topeka*), and the western prairie fringed orchid (*Platanthera praeclara*).

The bald eagle, a federally threatened species, is known to occur in Grant County and throughout South Dakota. New nests appear in Grant County and in South Dakota in general each year, and the birds nest from January through August. The USFWS restricts construction within one-quarter (0.25) mile of an active bald eagle nest. A bald eagle nest was identified and mapped approximately 1700' (0.3 mile) north of the existing east water storage and cooling pond. The nest is nearly 1.5 miles northwest of the proposed Big Stone II plant site, and over 1.5 miles from the proposed cooling tower. It is nearly 3 miles northwest of the proposed new water storage pond.

The Topeka shiner, a federally endangered species, is listed as a “possible” occurrence in Grant County. The species is not listed as South Dakota state threatened or endangered. The South Dakota Department of Game, Fish and Parks has no current or historic locations of the Topeka shiner in Grant County, and all known occurrences of the Topeka shiner in South Dakota are in streams south southeast of Grant County (S. Dakota Dept. of Game, Fish and Parks 2003. Topeka Shiner Management Plan for South Dakota.).

Construction of the Big Stone II plant is not likely to result in any direct, indirect or cumulative impacts on the Topeka shiner. This is because the only potential habitat for the fish, the Whetstone River, is outside of the construction limits of the project, and will receive no discharge from the plant. In the event that, prior to or during construction, the Topeka shiner is found in the Whetstone River, the South Dakota Department of Transportation Special Provisions for Construction Practices in Streams Inhabited by the Topeka Shiner (SDDOT 2003) can be implemented.

The western prairie fringed orchid, a federally threatened species, is also listed as a “possible” occurrence in Grant County. There are currently no known populations of this plant species in South Dakota. However, the species has historically been distributed throughout the tall grass prairie west of the Mississippi River in the Central United States and southern Canada, and one of the three largest remaining populations is approximately 122 miles north of the Big Stone II site. Moreover, the species' preferred habitat of mesic prairie swales exists in several small areas within the Big Stone II project area.

²⁴ Miller 1979

A number of the known plant associates of the western prairie fringed orchid are also present, including big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), and several sedge (*Carex* spp.) species.

Field surveys conducted in September 2004 did not locate any populations of western prairie fringed orchid. As a result, there are currently no anticipated direct impacts on this species. Indirect impacts include loss of potential habitat, alteration of surface drainage patterns and a potential increase in non-native invasive species.

Operation of Big Stone II should not cause any adverse impacts to protected species or potential habitats since facility air emissions meet all ambient air quality standards and PSD increments. Consultation under Section 7 of the Endangered Species Act regarding the Big Stone II project is being conducted in conjunction with an Environmental Impact Statement under the National Environmental Policy Act being prepared by the Western Area Power Administration. DENR is required to coordinate its PSD review for Big Stone II "to the maximum extent feasible and reasonable" with the EIS review. 40 CFR 52.21(s).

7.5 Growth Impacts

Big Stone II is expected to increase employment in the area. The building phase will last approximately four years. Construction employment of approximately 700 workers is expected over the course of the construction period. Projected employment, reflecting full time jobs directly tied to the operation of Big Stone II, is estimated at 35 additional people at the generating station site. This will result in moderate amounts of secondary employment created by the economic activity of the plant. In the immediate vicinity of the plant and as a result of Big Stone II, residential and commercial growth will result in secondary air emissions (i.e. increased vehicular use) but are not expected to significantly impact air quality.

7.6 Class II Area Visual Impact Analysis

A visibility analysis was performed on the Pipestone National Monument in southwestern Minnesota. The visibility analysis was performed in accordance with the guidelines set forth in EPA-450/4-88-015, Workbook for Plume Visual Impact Screening and Analysis. Within the document, the model VISCREEN is recommended for plume visibility analysis. Several refinement levels of VISCREEN are described. The first level VISCREEN analysis uses worst-case meteorological conditions (F-class stability, 1 m/s wind speed). This level of screening results in the most conservative (worst-case) visibility results. If the plume visibility against the sky and terrain is below a level perceivable to the

human eye, the visibility modeling is complete. Otherwise, a second level VISCREEN analysis, that uses actual meteorological data and refined particle characteristics, can be performed. The second level model will result in a more realistic visibility analysis. If this plume visibility still does not meet sky and terrain contrast levels, a third level model may be required that adds more statistical analysis.

The first level VISCREEN model was performed for Big Stone II. Emissions from Big Stone II only were considered. The inputs into the model included particulate matter, NO_x, primary NO₂, soot, and primary SO₄. The maximum annual particulate emissions from Big Stone II are 788 tons/yr²⁵. The corresponding NO_x emission rate is 1,840 tons/yr.

According to the workbook, primary NO₂, soot, and primary SO₄ can be assumed to be zero except for very specific sources. Since the power plant is not one of the specified sources, the emissions for the last three species (primary NO₂, soot, and primary SO₄) are assumed to be zero. The next set of inputs into the level one VISCREEN model considers the distance between the source, observer and area, and the background visual range. The distance between the source and observer is 145 kilometers.

Background visibility was determined from the VISCREEN manual to be 40 kilometers. The last inputs into the model are particle sizes, background ozone, plume-source-observer angle, stability, and wind speed. All of these inputs are automatically set if the default option is chosen. For the level one analysis, the workbook tells the analyst to choose the default option, which sets the following particle sizes:

- background fine = 0.3 µm diameter, 1.5 g/cm³ density
- background course = 6 µm diameter, 2.5 g/cm³ density
- plume particulate = 2 µm diameter, 2.5 g/cm³ density
- plume soot = 0.1 µm diameter, 2 g/cm³ density
- plume primary sulfate = 0.5 µm diameter, 1.5 g/cm³

The background ozone is 0.04 parts per million (ppm), the plume-source-observer angle is 11.25 degrees, the worst case atmospheric stability is an F stability class, and the worst case wind speed is 1 m/s.

The VISCREEN model output compares the calculated Delta E and contrast from the plume to present default comparison values. Delta E is the color difference parameter used to characterize the perceptibility of the plume on a color difference between the plume and a viewing background such as the

²⁵ Emissions are only from the boiler. Not including emissions from materials handling or fugitive emissions.

sky, a cloud, or a terrain feature. Color differences are due to differences in three dimensions: brightness (L^*), color hue (a^*), and saturation (b^*). Delta E is calculated for several lines of sight. A green contrast analysis is also performed for various lines of sight using a green wavelength and contrasting the plume with the terrain and sky backgrounds. The critical E value is 2.0 and the green contrast value is 0.05.

The results of the Level 1 VISCREEN model are shown in Appendix H. The visual results pass the Class I screening criteria at the Pipestone National Monument located 145 km away. With respect to visibility conditions around the plant, there are no known Class II screening visibility criteria that have been recommended at this time. Big Stone II will be constructed in a Class II area. Operation of the proposed emission sources will demonstrate compliance with state regulations restricting stack gas opacity to 20 percent. Big Stone believes that if emissions comply with these levels, no adverse visibility impacts will occur in the immediate vicinity around the plant.

7.7 Conclusion

Based upon the results presented in this section of the report, it is concluded that the construction of Big Stone II will not have a significant adverse impact on the surrounding area.



**Air Quality Permit Application Form
Title V (Part 70) Operating Permit**

**General Information Form
And
Certification of Applicant Form**

SEND ALL MATERIALS TO:

SD Department of Environment and Natural Resources
Air Quality Program
523 East Capitol
Pierre, South Dakota 57501-3181

(Please complete shaded areas - if you have questions call (605) 773-3151)

A. GENERAL INFORMATION

If permit is being renewed or amended, give existing permit number:

28.0801-29

1. Facility name:

Big Stone Power Plant

2. Mailing address:

Street and/or box number

215 South Cascade Street

City, state, zip code

Fergus Falls, MN 56537

3. Facility location (if plant is portable, enter location at time of submittal):

Street and city

Big Stone City

Legal description and county

Grant County

(Quarter, Section, Township, Range)

4. Permit contact:

Name/title

Terry Graumann, Manager Environmental Services

Telephone number

218-739-8407

5. Facility contact, if different than permit contact (Person to contact for arranging inspections):

Name/title

Telephone number

6. Responsible official:

Name/title

Terry Graumann, Manager Environmental Services

Telephone number

218-739-8407

A responsible official is defined as a president, vice president, secretary, or treasurer for a corporation; general partner or the proprietor for a partnership; and principal executive officer or ranking elected official for municipal, state, federal or public agency.

B. PLANT DESCRIPTION

1. Standard Industrial Classification Code (SIC code):

Primary SIC code: 4911

Secondary SIC code (if applicable):

Please contact the Department if unable to determine your SIC code.

2. Briefly describe the operations at the facility, including raw materials and finished products:

Coal Power Plant. The plant is used to produce electricity.

Please attach one copy, if available, of any prepared plans and the manufacturer's specifications of any equipment, including pollution control devices. If additional space is needed to describe operations, please attach the additional paper to this application.

3. A new source or modification to an existing source is required to demonstrate that the operation of the new source or modification will not prevent or interfere with the attainment or maintenance of an applicable ambient air quality standard. Please attach air dispersion modeling or other documents that will demonstrate the new source or modification will not prevent or interfere with the attainment or maintenance of an applicable ambient air quality standard.

Has air dispersion modeling been conducted (please check one)? ☒ X Yes ☐ No

If air dispersion modeling has been conducted, please attach a copy of the report to this application unless the Department has a copy already.

C. COMPLIANCE PLAN

If it is anticipated that a permitted unit will not be operating in compliance at the time of permit issuance, a proposed compliance plan shall be included with the application. The proposed compliance plan shall include a narrative description of the following:

1. The requirements (i.e., statutes, air quality rules, permit conditions, etc.) the source is not in compliance with at the time of submittal of this application or permit issuance;
2. How the facility intends to bring the unit(s) into compliance; and
3. A compliance schedule for when the source will achieve compliance with such requirements;

The compliance schedule must include a statement that progress reports will be submitted at least once every six months and must be at least as stringent as that contained in any judicial consent decree or administrative order to which the applicant is subject.

D. MAPS

For stationary sources only, please enclose a map or a drawing showing roadways, location of plant and the nearest residents in each direction from the source. Include other structures, which may be affected.

E. AIR QUALITY EMISSIONS SUMMARY

If air quality emissions are available, please complete the following table:

	Actual	Potential Controlled	Potential Uncontrolled
Pollutant	(tons per year)	(tons per year)	(tons per year)
Particulate	See Attached		
Sulfur Dioxide			
Nitrogen Oxide			
Carbon Monoxide			
Volatile Organic Compounds			
Hazardous Air Pollutants (if applicable)			

Remember that potential emissions are calculated assuming that the permitted unit is operated 24 hours per day, 7 days per week, 52 weeks per year at maximum design capacity. Attach all calculations, MSDS sheets for all products containing volatile organic compounds and/or hazardous air pollutants, and other supporting documentation.

Please contact the Department if assistance is needed for calculating emissions for the permitted units such as emission factors, clarifying what potential emissions are, efficiency for control equipment, etc.

F. ADDITIONAL FORMS

The following forms must be completed for each piece of specific equipment at the facility and submitted with this form:

Boiler	Incinerator	Kiln Dryer
Miscellaneous Process	Paint Booth	Storage Tank

The following forms must be completed for each piece of specific air control equipment at the facility and submitted with this form:

Baghouse	Cyclone	Electrostatic Precipitator
Miscellaneous Control	Thermo Oxidizer	Wet Scrubber

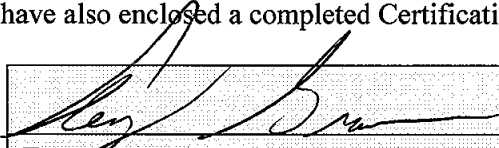
G. CERTIFICATION OF COMPLIANCE

I certify the following:

1. The methods such as monitoring, record keeping, reporting, and stack test performance results described within this application shall be used to determine continuous or intermittent compliance;
2. A compliance certification document will be submitted to the Department at least annually or at other times designated by the Department for the duration of the permit;
3. The source is in compliance and will continue to demonstrate compliance with all applicable requirements, except for those designated in the attached compliance plan (if applicable); and
4. This application is submitted in accordance with the provisions of the South Dakota Codified Laws 34A-1 and Administrative Rules of South Dakota 74:36. To the best of my knowledge, after reasonable inquiry, the statements and information contained in the application and supporting documents are true, accurate, and complete. In accordance with South Dakota Codified Laws 1-40-27, I have also enclosed a completed Certification of Applicant form.

Signature:

Print Name:


Terry Graumann

2/23/2007
Date

Responsible Official



CERTIFICATION OF APPLICANT

(please complete shaded areas - if you have questions call (605) 773-3151)

In the Matter of the Application of	Big Stone Power Plant
	(Facility Name)
State of	South Dakota
County of	Grant

I, Terry Graumann, the applicant in the above matter after being duly sworn upon oath hereby certify the following information in regard to this application:

South Dakota Codified Laws Section 1-40-27 provides:

"The secretary may reject an application for any permit filed pursuant to Titles 34A or 45, including any application by any concentrated swine feeding operation for authorization to operate under a general permit, upon making a specific finding that:

(1) The applicant is unsuited or unqualified to perform the obligations of a permit holder based upon a finding that the applicant, any officer, director, partner or resident general manager of the facility for which application has been made:

(a) Has intentionally misrepresented a material fact in applying for a permit;

(b) Has been convicted of a felony or other crime involving moral turpitude;

(c) Has habitually and intentionally violated environmental laws of any state or the United States which have caused significant and material environmental damage;

(d) Has had any permit revoked under the environmental laws of any state or the United States; or

(e) Has otherwise demonstrated through clear and convincing evidence of previous actions that the applicant lacks the necessary good character and competency to reliably carry out the obligations imposed by law upon the permit holder; or

(2) The application substantially duplicates an application by the same applicant denied within the past five years which denial has not been reversed by a court of competent jurisdiction. Nothing in this subdivision may be construed to prohibit an applicant from submitting a new application for a permit previously denied, if the new application represents a good faith attempt by the applicant to correct the deficiencies that served as the basis for the denial in the original application.

All applications filed pursuant to Titles 34A and 45 shall include a certification, sworn to under oath and signed by the applicant, that he is not disqualified by reason of this section from obtaining a permit. In the absence of evidence to the contrary, that certification shall constitute a prima facie showing of the suitability and qualification of the applicant. If at any point in the application review, recommendation or hearing process, the secretary finds the applicant has intentionally made any material misrepresentation of fact in regard to this certification, consideration of the application may be suspended and the application may be rejected as provided for under this section.

Applications rejected pursuant to this section constitute final agency action upon that application and may be appealed to circuit court as provided for under chapter 1-26."

Pursuant to SDCL 1-40-27, I certify that I have read the forgoing provision of state law, and that I am not disqualified by reason of that provision from obtaining the permit for which application has been made.

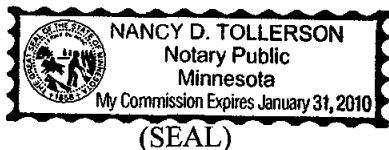
Dated this 23rd day of February, 20 06⁰⁷
[Signature]
Applicant (signature)

Subscribed and sworn before me this:

Dated this 23rd day of February, 20 06⁰⁷
Nancy D. Tollerson
Notary Public (signature)

My commission expires:

January 31, 2010



**PLEASE ATTACH SHEET DISCLOSING ALL FACTS PERTAINING TO
SDCL 1-40-27 (1) (a) THROUGH (e).
ALL VIOLATIONS MUST BE DISCLOSED, BUT WILL NOT
AUTOMATICALLY RESULT IN THE REJECTION OF AN APPLICATION.**



Air Quality Permit Application Form

Boiler Turbine or Furnace

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc): 13

2. Manufacturer: TBD Manufacture date:

3. Model number: TBD

4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)

Unit II only normal flow max load

5. Maximum designed operating rate (name plate):

6,000.00 million Btus per hour heat input

or horsepower with boiler efficiency:

or kilowatts with boiler efficiency:

6. Check the appropriate box(es) for primary and secondary fuels:

<input type="checkbox"/>	Natural gas	<input type="checkbox"/>	Propane	
<input checked="" type="checkbox"/>	Distillate oil	Sulfur content	0.05 Weight percent	
<input type="checkbox"/>	Residual oil	Sulfur content	Weight percent	
<input type="checkbox"/>	Bituminous Coal	<input checked="" type="checkbox"/>	Subbituminous Coal	
		<input type="checkbox"/>	Lignite Coal	
	Coal sulfur content	0.80 Weight percent	Coal ash content	9.0 Weight percent
<input checked="" type="checkbox"/>	Other (please specify)	Bio diesel		

7. Has a stack test been conducted (check appropriate box)? Yes ☒ No

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Baghouse, wet flue gas desulfurization, selective catalytic reduction

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹		feet	695,103.41	meters
Y- Coordinate or Northing: ¹		feet	5,019,218.73	meters
Base Elevation of Stack: ¹	1,124	feet		meters
Stack Height:	498	feet		meters
Exit Stack Diameter	34.00	feet		meters
Exit Stack Temperature	See below	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: feet per second meters per second
and/or
 Flow Rate: actual cubic feet per minute actual cubic meters per second

Parameter	Boiler 1 Only	Boiler 2 Only	Both Boilers
Temperature (F)	138	136	137
Velocity (ft/s)	29.68	33.89	63.57
Flowrate (lb/hr)	6,213,000	6,918,000	13,131,000
Flowrate (acfm)	1,665,000	1,914,000	3,579,000



Air Quality Permit Application

Baghouse

This form is to be submitted, if necessary, along with the Title V (Part 70) Operating Permit, Minor Operating Permit, or the General Permits.

(please complete shaded areas)

Equipment and processes served by this baghouse (please list all equipment and processes):

Equipment and Processes

1. Unit 13: Unit II Boiler only normal flow max load
- 2.
- 3.
- 4.
- 5.

Manufacturer Information:

Manufacturer?	TBD		
Manufacturer date?	TBD	Installation date?	Spring 2008
Manufacturer's designed control efficiency?		%	
Type of baghouse (please check one)?			
<input type="checkbox"/> Reverse Air	<input type="checkbox"/> Pulse Jet	<input type="checkbox"/> Shaker	<input type="checkbox"/> Other (specify) _____
Type of bags?	TBD		
Number of bags?	TBD	Air/cloth ratio?	TBD

Baghouse Operation and Maintenance:

Pressure drop across baghouse?	TBD	inches water (minimum)	TBD	inches water (maximum)
Inlet Temperature?	TBD	Fahrenheit (minimum)	TBD	Fahrenheit (maximum)
Outlet Temperature?	TBD	Fahrenheit (minimum)	TBD	Fahrenheit (maximum)

Describe maintenance of baghouse (use of dye test, visual inspections, changing bag frequency, etc.):

Bag changing dependent on application and grain loading.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹	<input type="text"/>	feet	or	<input type="text" value="695,103.41"/>	meters
Y- Coordinate or Northing: ¹	<input type="text"/>	feet	or	<input type="text" value="5,019,218.73"/>	meters
Base Elevation of Stack: ¹	<input type="text" value="1,124"/>	feet	or	<input type="text"/>	meters
Stack Height:	<input type="text" value="498"/>	feet	or	<input type="text"/>	meters
Exit Stack Diameter	<input type="text" value="34.00"/>	feet	or	<input type="text"/>	meters
Exit Stack Temperature	<input type="text" value="See below"/>	degrees Fahrenheit			

Exit Stack Velocity and/or Flow Rate:

Velocity: feet per second meters per second

and/or

Flow Rate: actual cubic feet per minute actual cubic meters per second

¹ - Portable asphalt plants, rock crushers, or concrete plants do not have to provide the requested information in these categories.

Parameter	Boiler 1 Only	Boiler 2 Only	Both Boilers
Temperature (F)	138	136	137
Velocity (ft/s)	29.68	33.89	63.57
Flowrate (lb/hr)	6,213,000	6,918,000	13,131,000
Flowrate (acfm)	1,665,000	1,914,000	3,579,000



Air Quality Permit Application

Wet Scrubber Data Sheet

This form is to be submitted, if necessary, along with the Title V (Part 70) Operating Permit, Minor Operating Permit, or the General Permits.
(please complete shaded areas)

Equipment and processes served by this wet scrubber (please list all equipment and processes):

Equipment and Processes

1. Unit 13: Unit II Boiler FGD (Flue Gas Desulfurization)
- 2.
- 3.
- 4.
- 5.

Manufacturer Information:

Manufacturer?	TBD		
Manufacturer date?	TBD	Installation date?	Spring 2008
Manufacturer's designed control efficiency?			%
Type of wet scrubber (please check one)?			
<input type="checkbox"/> Venturi	<input type="checkbox"/> Demister	<input type="checkbox"/> Other (specify)	
Scrubbing Additives?	Limestone		

Wet Scrubber Operation and Maintenance:

Pressure drop across wet scrubber?	TBD	inches water (minimum)	TBD	inches water (maximum)
Inlet Temperature?	TBD	Fahrenheit (minimum)	TBD	Fahrenheit (maximum)
Outlet Temperature?	TBD	Fahrenheit (minimum)	TBD	Fahrenheit (maximum)
Water recycled (check one)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
If yes, number of pond(s):		Pond size:		Type of liner:
If no, describe type of treatment and location of any planned water discharge from the property:				

Describe maintenance of wet scrubber (visual inspection, how often ponds are cleaned, etc.)

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹	<input type="text"/>	feet	or	<input type="text" value="695,103.41"/>	meters
Y- Coordinate or Northing: ¹	<input type="text"/>	feet	or	<input type="text" value="5,019,218.73"/>	meters
Base Elevation of Stack: ¹	<input type="text" value="1,124"/>	feet	or	<input type="text"/>	meters
Stack Height:	<input type="text" value="498"/>	feet	or	<input type="text"/>	meters
Exit Stack Diameter	<input type="text" value="34.00"/>	feet	or	<input type="text"/>	meters
Exit Stack Temperature	<input type="text" value="See below"/>	degrees Fahrenheit			

Exit Stack Velocity and/or Flow Rate:

Velocity: feet per second meters per second
and/or

Flow Rate: actual cubic feet per minute actual cubic meters per second

¹ - Portable asphalt plants, rock crushers, or concrete plants do not have to provide the requested information in these categories.

Parameter	Boiler 1 Only	Boiler 2 Only	Both Boilers
Temperature (F)	138	136	137
Velocity (ft/s)	29.68	33.89	63.57
Flowrate (lb/hr)	6,213,000	6,918,000	13,131,000
Flowrate (acfm)	1,665,000	1,914,000	3,579,000



Air Quality Permit Application Form

Miscellaneous Control Device

This form is to be submitted, if necessary, along with the Title V (Part 70) Operating Permit, Minor Operating Permit, or the General Permits.

(please complete shaded areas)

Describe the miscellaneous control device and how it works:

Coal Fired-Boiler using subbituminous pulverized coal to generate steam to power to a 630 MW steam powered generator.

Equipment and processes served by this baghouse (please list all equipment and processes):

Equipment and Processes

1. Unit 13: Unit II Boiler SCR (Selective Catalytic Reduction)
- 2.
- 3.
- 4.
- 5.

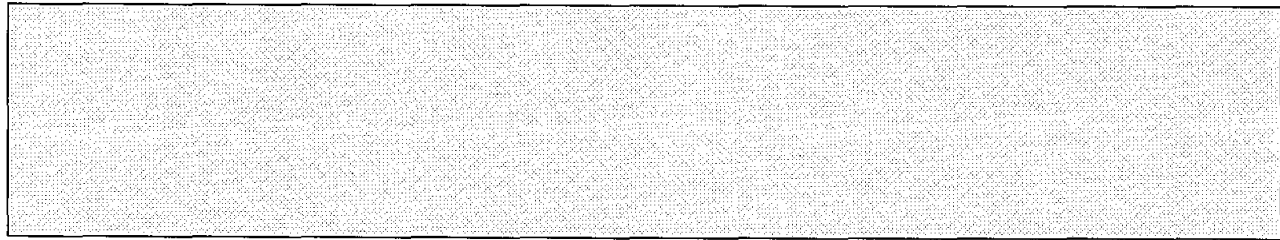
Manufacturer Information:

Manufacturer?	TBD		
Manufacturer date?	TBD	Installation date?	Spring 2008
Manufacturer's designed control efficiency?			%

Miscellaneous Control Device Operation and Maintenance:

Pressure drop across control unit?	TBD	Inches water (minimum)	TBD	inches water (maximum)
Inlet Temperature?	TBD	Fahrenheit (minimum)	TBD	Fahrenheit (maximum)
Outlet Temperature?	TBD	Fahrenheit (minimum)	TBD	Fahrenheit (maximum)

Describe maintenance of control unit (use of visual inspections, maintenance schedule, etc.):



Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹		feet	or	695,103.41	meters
Y- Coordinate or Northing: ¹		feet	or	5,019,218.73	meters
Base Elevation of Stack: ¹	1,124	feet	or		meters
Stack Height:	498	feet	or		meters
Exit Stack Diameter	34.00	feet	or		meters
Exit Stack Temperature	See below	degrees Fahrenheit			

Exit Stack Velocity and/or Flow Rate:

Velocity: feet per second meters per second
and/or

Flow Rate: actual cubic feet per minute actual cubic meters per second

¹ - Portable asphalt plants, rock crushers, or concrete plants do not have to provide the requested information in these categories.

Parameter	Boiler 1 Only	Boiler 2 Only	Both Boilers
Temperature (F)	138	136	137
Velocity (ft/s)	29.68	33.89	63.57
Flowrate (lb/hr)	6,213,000	6,918,000	13,131,000
Flowrate (acfm)	1,665,000	1,914,000	3,579,000



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc):	14		
2. Manufacturer:	TBD	Manufacture date:	
3. Model number:	TBD		
4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)			
Emergency Fire Water Pump – BSP II			
5. Maximum designed operating rate (name plate):			
		million Btus per hour heat input	
or	420	horsepower	
or		kilowatts	
6. Check the appropriate box(es) for primary and secondary fuels:			
<input type="checkbox"/>	Natural gas	<input type="checkbox"/>	Propane
<input checked="" type="checkbox"/>	Distillate oil	Sulfur content	0.015 Weight percent
<input type="checkbox"/>	Residual oil	Sulfur content	Weight percent
<input type="checkbox"/>	Bituminous Coal	<input type="checkbox"/>	Subbituminous Coal
	Coal sulfur content	<input type="checkbox"/>	Weight percent
		Coal ash content	<input type="checkbox"/>
			Weight percent
<input checked="" type="checkbox"/>	Other (please specify)	Bio diesel	

7. Has a stack test been conducted (check appropriate box)? ☐ Yes ☒ No

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:		feet	695,645	meters
Y- Coordinate or Northing:		feet	5,019,225.50	meters
Base Elevation of Stack:	1,124	feet		meters
Stack Height:	15.00	feet		meters
Exit Stack Diameter	0.83	feet		meters
Exit Stack Temperature	904.00	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: 76.58 feet per second meters per second

and/or

Flow Rate: 2,486.2 actual cubic feet per minute actual cubic meters per second



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc): 15

2. Manufacturer: TBD Manufacture date:

3. Model number: TBD

4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)

Emergency Diesel Generator - BSP II

5. Maximum designed operating rate (name plate):

or million Btus per hour heat input
or 2,220 horsepower
or kilowatts

6. Check the appropriate box(es) for primary and secondary fuels:

<input type="checkbox"/>	Natural gas	<input type="checkbox"/>	Propane
<input checked="" type="checkbox"/>	Distillate oil	Sulfur content	0.015 Weight percent
<input type="checkbox"/>	Residual oil	Sulfur content	Weight percent
<input type="checkbox"/>	Bituminous Coal	<input type="checkbox"/>	Subbituminous Coal
	Coal sulfur content	<input type="checkbox"/>	Weight percent
		<input type="checkbox"/>	Coal ash content
		<input type="checkbox"/>	Weight percent
<input checked="" type="checkbox"/>	Other (please specify)	Bio diesel	

7. Has a stack test been conducted (check appropriate box)? Yes ☒ No ☐

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:		feet	695,329	meters
Y- Coordinate or Northing:		feet	5,019,197	meters
Base Elevation of Stack:	1,124	feet		meters
Stack Height:	15.00	feet		meters
Exit Stack Diameter	1.50	feet		meters
Exit Stack Temperature	900.00	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: 100.44 feet per second meters per second

and/or

Flow Rate: 10,650.00 actual cubic feet per minute actual cubic meters per second



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc): 16

2. Manufacturer: TBD Manufacture date:

3. Model number: TBD

4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)

Cooling Tower (18 Cells)

5. Maximum designed operating rate (name plate):

312,540.00 gallons per minute million Btus per hour heat input
or horsepower
or kilowatts

6. Check the appropriate box(es) for primary and secondary fuels:

<input type="checkbox"/>	Natural gas	<input type="checkbox"/>	Propane
<input type="checkbox"/>	Distillate oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Residual oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Bituminous Coal	<input type="checkbox"/>	Subbituminous Coal
<input type="checkbox"/>	Coal sulfur content Weight percent	<input type="checkbox"/>	Lignite Coal
<input type="checkbox"/>	Coal ash content Weight percent	<input type="checkbox"/>	Weight percent
<input type="checkbox"/>	Other (please specify)		

7. Has a stack test been conducted (check appropriate box)? Yes ☒ No

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

0.0005% drift eliminators

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:		feet	See below	meters
Y- Coordinate or Northing:		feet	See below	meters
Base Elevation of Stack:	1,124 (per cell)	feet		meters
Stack Height:	60.00 (per cell)	feet		meters
Exit Stack Diameter	33.00 (per cell)	feet		meters
Exit Stack Temperature	61.00 (per cell)	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: 39.60 (per cell) feet per second meters per second

and/or

Flow Rate: 2,032,189 (per cell) actual cubic feet per minute actual cubic meters per second

Cooling Tower's X/Y Coordinates (in UTM meters)

X	Y
695497.63	5018875.00
695502.75	5018863.00
695507.81	5018850.00
695513.63	5018835.50
695519.69	5018824.00
695525.94	5018809.50
695534.44	5018795.00
695539.75	5018781.50
695546.88	5018768.50
695517.44	5018884.50
695522.81	5018873.00
695529.31	5018858.00
695537.38	5018845.50
695542.75	5018834.00
695549.44	5018820.50
695555.38	5018806.00
695561.31	5018793.50
695567.75	5018778.00



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc):	17				
2. Manufacturer:	TBD	Manufacture date:			
3. Model number:	TBD				
4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)	Coal Reclaim System				
5. Maximum designed operating rate (name plate):					
		million Btus per hour heat input			
or		horsepower			
or		kilowatts			
6. Check the appropriate box(es) for primary and secondary fuels:					
<input type="checkbox"/> Natural gas	<input type="checkbox"/> Propane				
<input type="checkbox"/> Distillate oil	Sulfur content		Weight percent		
<input type="checkbox"/> Residual oil	Sulfur content		Weight percent		
<input type="checkbox"/> Bituminous Coal	<input type="checkbox"/> Subbituminous Coal	<input type="checkbox"/> Lignite Coal			
Coal sulfur content		Weight percent	Coal ash content		Weight percent
<input type="checkbox"/> Other (please specify)					

7. Has a stack test been conducted (check appropriate box)? ☐ Yes ☒ X No

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Baghouse

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:		feet	695,052.19	meters
Y- Coordinate or Northing:		feet	5,019,408.00	meters
Base Elevation of Stack:	1,124	feet		meters
Stack Height:	20	feet		meters
Exit Stack Diameter	1.50	feet		meters
Exit Stack Temperature	Ambient	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: 63.66 feet per second meters per second

and/or

Flow Rate: 6,750.00 Actual cubic feet per minute actual cubic meters per second



Air Quality Permit Application

Baghouse

This form is to be submitted, if necessary, along with the Title V (Part 70) Operating Permit, Minor Operating Permit, or the General Permits.

(please complete shaded areas)

Equipment and processes served by this baghouse (please list all equipment and processes):

Equipment and Processes

1.	Unit 17: Coal Reclaim System
2.	
3.	
4.	
5.	

Manufacturer Information:

Manufacturer?	TBD		
Manufacturer date?	TBD	Installation date?	Spring 2008
Manufacturer's designed control efficiency?	0.01 gr/dscf	%	
Type of baghouse (please check one)?			
<input type="checkbox"/> Reverse Air	<input checked="" type="checkbox"/> Pulse Jet	<input type="checkbox"/> Shaker	<input type="checkbox"/> Other (specify) _____
Type of bags?	TBD		
Number of bags?	TBD	Air/cloth ratio?	TBD

Baghouse Operation and Maintenance:

Pressure drop across baghouse?	TBD	inches water (minimum)	TBD	inches water (maximum)
Inlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)
Outlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)

Describe maintenance of baghouse (use of dye test, visual inspections, changing bag frequency, etc.):

Bag changing dependent on application and grain loading.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹	<input type="text"/>	feet	or	<input type="text" value="695,052.19"/>	meters
Y- Coordinate or Northing: ¹	<input type="text"/>	feet	or	<input type="text" value="5,019,408.00"/>	meters
Base Elevation of Stack: ¹	<input type="text" value="1,124"/>	feet	or	<input type="text"/>	meters
Stack Height:	<input type="text" value="20"/>	feet	or	<input type="text"/>	meters
Exit Stack Diameter	<input type="text" value="1.50"/>	feet	or	<input type="text"/>	meters
Exit Stack Temperature	<input type="text" value="Ambient"/>	degrees Fahrenheit			

Exit Stack Velocity and/or Flow Rate:

Velocity: feet per second meters per second

and/or

Flow Rate: actual cubic feet per minute actual cubic meters per second

¹ - Portable asphalt plants, rock crushers, or concrete plants do not have to provide the requested
Stack Information: If this application is a renewal, contact the air program. We may have this information.



South Dakota
Department of Environment
& Natural Resources
Protecting SD's Tomorrow...Today

Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc): 20

2. Manufacturer: TBD Manufacture date:

3. Model number: TBD

4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)

Limestone Reclaim System

5. Maximum designed operating rate (name plate):

million Btus per hour heat input
or
horsepower
or
kilowatts

6. Check the appropriate box(es) for primary and secondary fuels:

<input type="checkbox"/> Natural gas	<input type="checkbox"/> Propane	
<input type="checkbox"/> Distillate oil	Sulfur content <input type="text"/> Weight percent	
<input type="checkbox"/> Residual oil	Sulfur content <input type="text"/> Weight percent	
<input type="checkbox"/> Bituminous Coal	<input type="checkbox"/> Subbituminous Coal	<input type="checkbox"/> Lignite Coal
Coal sulfur content <input type="text"/>	Weight percent	Coal ash content <input type="text"/> Weight percent
<input type="checkbox"/> Other (please specify)	<input type="text"/>	

7. Has a stack test been conducted (check appropriate box)? ☐ Yes ☒ X No

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Baghouse

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:		feet	695,071.88	meters
Y- Coordinate or Northing:		feet	5,019,152.50	meters
Base Elevation of Stack:	1,124	feet		meters
Stack Height:	20.00	feet		meters
Exit Stack Diameter	1.50	feet		meters
Exit Stack Temperature	Ambient	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: 56.59 feet per second meters per second

and/or

Flow Rate: 6,000.00 actual cubic feet per minute actual cubic meters per second



Air Quality Permit Application

Baghouse

This form is to be submitted, if necessary, along with the Title V (Part 70) Operating Permit, Minor Operating Permit, or the General Permits.

(please complete shaded areas)

Equipment and processes served by this baghouse (please list all equipment and processes):

Equipment and Processes

1.	Unit 20: Limestone Reclaim System
2.	
3.	
4.	
5.	

Manufacturer Information:

Manufacturer?	TBD		
Manufacturer date?	TBD	Installation date?	Spring 2008
Manufacturer's designed control efficiency?	0.01 gr/dscf	%	
Type of baghouse (please check one)?			
<input type="checkbox"/> Reverse Air	<input checked="" type="checkbox"/> Pulse Jet	<input type="checkbox"/> Shaker	<input type="checkbox"/> Other (specify) _____
Type of bags?	TBD		
Number of bags?	TBD	Air/cloth ratio?	TBD

Baghouse Operation and Maintenance:

Pressure drop across baghouse?	TBD	inches water (minimum)	TBD	inches water (maximum)
Inlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)
Outlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)
Describe maintenance of baghouse (use of dye test, visual inspections, changing bag frequency, etc.):				
Bag changing dependent on application and grain loading.				

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹	<input type="text"/>	feet	or	<input type="text" value="695,071.88"/>	meters
Y- Coordinate or Northing: ¹	<input type="text"/>	feet	or	<input type="text" value="5,019,152.50"/>	meters
Base Elevation of Stack: ¹	<input type="text" value="1,124"/>	feet	or	<input type="text"/>	meters
Stack Height:	<input type="text" value="20.00"/>	feet	or	<input type="text"/>	meters
Exit Stack Diameter	<input type="text" value="1.50"/>	feet	or	<input type="text"/>	meters
Exit Stack Temperature	<input type="text" value="Ambient"/>	degrees Fahrenheit			

Exit Stack Velocity and/or Flow Rate:

Velocity: feet per second meters per second

and/or

Flow Rate: actual cubic feet per minute actual cubic meters per second

¹ - Portable asphalt plants, rock crushers, or concrete plants do not have to provide the requested information in these categories.



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc):	21		
2. Manufacturer:	TBD	Manufacture date:	
3. Model number:	TBD		
4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)			
Limestone Receiving System			
5. Maximum designed operating rate (name plate):			
		million Btus per hour heat input	
or		horsepower	
or		kilowatts	
6. Check the appropriate box(es) for primary and secondary fuels:			
<input type="checkbox"/> Natural gas		<input type="checkbox"/> Propane	
<input type="checkbox"/> Distillate oil	Sulfur content		Weight percent
<input type="checkbox"/> Residual oil	Sulfur content		Weight percent
<input type="checkbox"/> Bituminous Coal	<input type="checkbox"/> Subbituminous Coal	<input type="checkbox"/> Lignite Coal	
Coal sulfur content	<input type="checkbox"/> Weight percent	Coal ash content	<input type="checkbox"/> Weight percent
<input type="checkbox"/> Other (please specify)			
7. Has a stack test been conducted (check appropriate box)?			
	Yes	<input checked="" type="checkbox"/> X	No

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Baghouse

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:		feet	695,022.56	meters
Y- Coordinate or Northing:		feet	5,019,074.00	meters
Base Elevation of Stack:	1,124	feet		meters
Stack Height:	20.00	feet		meters
Exit Stack Diameter	1.40	feet		meters
Exit Stack Temperature	Ambient	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: 54.13 feet per second meters per second

and/or

Flow Rate: 5,000.00 actual cubic feet per minute actual cubic meters per second



Air Quality Permit Application

Baghouse

This form is to be submitted, if necessary, along with the Title V (Part 70) Operating Permit, Minor Operating Permit, or the General Permits.

(please complete shaded areas)

Equipment and processes served by this baghouse (please list all equipment and processes):

Equipment and Processes

1.	Unit 21: Limestone Receiving System
2.	
3.	
4.	
5.	

Manufacturer Information:

Manufacturer?	TBD		
Manufacturer date?	TBD	Installation date?	Spring 2008
Manufacturer's designed control efficiency?	0.01 gr/dscf	%	
Type of baghouse (please check one)?			
<input type="checkbox"/> Reverse Air	<input checked="" type="checkbox"/> Pulse Jet	<input type="checkbox"/> Shaker	<input type="checkbox"/> Other (specify) _____
Type of bags?	TBD		
Number of bags?	TBD	Air/cloth ratio?	TBD

Baghouse Operation and Maintenance:

Pressure drop across baghouse?	TBD	inches water (minimum)	TBD	inches water (maximum)
Inlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)
Outlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)

Describe maintenance of baghouse (use of dye test, visual inspections, changing bag frequency, etc.):

Bag changing dependent on application and grain loading.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹	<input type="text"/>	feet	or	<input type="text" value="695,022.56"/>	meters
Y- Coordinate or Northing: ¹	<input type="text"/>	feet	or	<input type="text" value="5,019,074.00"/>	meters
Base Elevation of Stack: ¹	<input type="text" value="1,124"/>	feet	or	<input type="text"/>	meters
Stack Height:	<input type="text" value="20.00"/>	feet	or	<input type="text"/>	meters
Exit Stack Diameter	<input type="text" value="1.40"/>	feet	or	<input type="text"/>	meters
Exit Stack Temperature	<input type="text" value="Ambient"/>	degrees Fahrenheit			

Exit Stack Velocity and/or Flow Rate:

Velocity: feet per second meters per second

and/or

Flow Rate: actual cubic feet per minute actual cubic meters per second

¹ - Portable asphalt plants, rock crushers, or concrete plants do not have to provide the requested information in these categories.



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc): 22

2. Manufacturer: TBD Manufacture date:

3. Model number: TBD

4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)

Coal Tripper/Silo Fill System

5. Maximum designed operating rate (name plate):

million Btus per hour heat input
or horsepower
or kilowatts

6. Check the appropriate box(es) for primary and secondary fuels:

<input type="checkbox"/>	Natural gas	<input type="checkbox"/>	Propane
<input type="checkbox"/>	Distillate oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Residual oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Bituminous Coal	<input type="checkbox"/>	Subbituminous Coal
<input type="checkbox"/>	Coal sulfur content	<input type="checkbox"/>	Weight percent
<input type="checkbox"/>	Other (please specify)	<input type="checkbox"/>	Coal ash content
<input type="checkbox"/>		<input type="checkbox"/>	Weight percent

7. Has a stack test been conducted (check appropriate box)? Yes ☒ No ☐

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Baghouse

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:		feet	695,299.00	meters
Y- Coordinate or Northing:		feet	5,019,273.00	meters
Base Elevation of Stack:	1,124	feet		meters
Stack Height:	279.00	feet		meters
Exit Stack Diameter	3.75	feet		meters
Exit Stack Temperature	Ambient	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: 53.57 feet per second meters per second

and/or

Flow Rate: 35,500.00 actual cubic feet per minute actual cubic meters per second



Air Quality Permit Application

Baghouse

This form is to be submitted, if necessary, along with the Title V (Part 70) Operating Permit, Minor Operating Permit, or the General Permits.

(please complete shaded areas)

Equipment and processes served by this baghouse (please list all equipment and processes):

Equipment and Processes

1.	Unit 22: Coal Tripper/Silo Fill System
2.	
3.	
4.	
5.	

Manufacturer Information:

Manufacturer?	TBD		
Manufacturer date?	TBD	Installation date?	Spring 2008
Manufacturer's designed control efficiency?	0.01 gr/dscf	%	
Type of baghouse (please check one)?			
<input type="checkbox"/> Reverse Air	<input checked="" type="checkbox"/> Pulse Jet	<input type="checkbox"/> Shaker	<input type="checkbox"/> Other (specify) _____
Type of bags?	TBD		
Number of bags?	TBD	Air/cloth ratio?	TBD

Baghouse Operation and Maintenance:

Pressure drop across baghouse?	TBD	inches water (minimum)	TBD	inches water (maximum)
Inlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)
Outlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)
Describe maintenance of baghouse (use of dye test, visual inspections, changing bag frequency, etc.):				
Bag changing dependent on application and grain loading.				

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹	<input type="text"/>	feet	or	<input type="text" value="695,299.00"/>	meters
Y- Coordinate or Northing: ¹	<input type="text"/>	feet	or	<input type="text" value="5,019,273.00"/>	meters
Base Elevation of Stack: ¹	<input type="text" value="1,124"/>	feet	or	<input type="text"/>	meters
Stack Height:	<input type="text" value="279.00"/>	feet	or	<input type="text"/>	meters
Exit Stack Diameter	<input type="text" value="3.75"/>	feet	or	<input type="text"/>	meters
Exit Stack Temperature	<input type="text" value="Ambient"/>	degrees Fahrenheit			

Exit Stack Velocity and/or Flow Rate:

Velocity: feet per second meters per second

and/or

Flow Rate: actual cubic feet per minute actual cubic meters per second

¹ - Portable asphalt plants, rock crushers, or concrete plants do not have to provide the requested information in these categories.



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc): 23

2. Manufacturer: TBD Manufacture date:

3. Model number: TBD

4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)

Fly ash silo bin vent

5. Maximum designed operating rate (name plate):

million Btus per hour heat input
or
horsepower
or
kilowatts

6. Check the appropriate box(es) for primary and secondary fuels:

<input type="checkbox"/>	Natural gas	<input type="checkbox"/>	Propane
<input type="checkbox"/>	Distillate oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Residual oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Bituminous Coal	<input type="checkbox"/>	Subbituminous Coal
<input type="checkbox"/>	Coal sulfur content	<input type="checkbox"/>	Weight percent
<input type="checkbox"/>	Other (please specify)	<input type="checkbox"/>	Coal ash content
<input type="checkbox"/>		<input type="checkbox"/>	Weight percent

7. Has a stack test been conducted (check appropriate box)? Yes ☒ No

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Baghouse

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:		feet	695,217.63	meters
Y- Coordinate or Northing:		feet	5,019,237.50	meters
Base Elevation of Stack:	1,124	feet		meters
Stack Height:	105	feet		meters
Exit Stack Diameter	1.9	feet		meters
Exit Stack Temperature	Ambient	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: 52.90 feet per second meters per second

and/or

Flow Rate: 9,000.00 actual cubic feet per minute actual cubic meters per second



Air Quality Permit Application

Baghouse

This form is to be submitted, if necessary, along with the Title V (Part 70) Operating Permit, Minor Operating Permit, or the General Permits.

(please complete shaded areas)

Equipment and processes served by this baghouse (please list all equipment and processes):

Equipment and Processes

1. Unit 23: Fly ash silo bin vent
- 2.
- 3.
- 4.
- 5.

Manufacturer Information:

Manufacturer?	TBD		
Manufacturer date?	TBD	Installation date?	Spring 2008
Manufacturer's designed control efficiency?	0.01 gr/dscf	%	
Type of baghouse (please check one)?			
<input type="checkbox"/> Reverse Air	<input checked="" type="checkbox"/> Pulse Jet	<input type="checkbox"/> Shaker	<input type="checkbox"/> Other (specify) _____
Type of bags?	TBD		
Number of bags?	TBD	Air/cloth ratio?	TBD

Baghouse Operation and Maintenance:

Pressure drop across baghouse?	TBD	inches water (minimum)	TBD	inches water (maximum)
Inlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)
Outlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)

Describe maintenance of baghouse (use of dye test, visual inspections, changing bag frequency, etc.):

Bag changing dependent on application and grain loading.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹	<input type="text"/>	feet	or	<input type="text" value="695,217.63"/>	meters
Y- Coordinate or Northing: ¹	<input type="text"/>	feet	or	<input type="text" value="5,019,237.50"/>	meters
Base Elevation of Stack: ¹	<input type="text" value="1,124"/>	feet	or	<input type="text"/>	meters
Stack Height:	<input type="text" value="105"/>	feet	or	<input type="text"/>	meters
Exit Stack Diameter	<input type="text" value="1.9"/>	feet	or	<input type="text"/>	meters
Exit Stack Temperature	<input type="text" value="Ambient"/>	degrees Fahrenheit			

Exit Stack Velocity and/or Flow Rate:

Velocity: feet per second meters per second

and/or

Flow Rate: actual cubic feet per minute actual cubic meters per second

¹ - Portable asphalt plants, rock crushers, or concrete plants do not have to provide the requested information in these categories.



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc): 24
2. Manufacturer: TBD Manufacture date:
3. Model number: TBD
4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)

Limestone Day Bins Vent

5. Maximum designed operating rate (name plate):

million Btus per hour heat input
or horsepower
or kilowatts

6. Check the appropriate box(es) for primary and secondary fuels:

<input type="checkbox"/>	Natural gas	<input type="checkbox"/>	Propane
<input type="checkbox"/>	Distillate oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Residual oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Bituminous Coal	<input type="checkbox"/>	Subbituminous Coal
<input type="checkbox"/>	Coal sulfur content Weight percent	<input type="checkbox"/>	Lignite Coal
<input type="checkbox"/>	Coal ash content Weight percent	<input type="checkbox"/>	Weight percent
<input type="checkbox"/>	Other (please specify)		

7. Has a stack test been conducted (check appropriate box)? Yes ☒ No ☐

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Baghouse

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:		feet	695,149.56	meters
Y- Coordinate or Northing:		feet	5,019,202.00	meters
Base Elevation of Stack:	1,124	feet		meters
Stack Height:	128.00	feet		meters
Exit Stack Diameter	1.33	feet		meters
Exit Stack Temperature	Ambient	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: 0.33* feet per second meters per second

and/or

Flow Rate: 3,281 actual cubic feet per minute actual cubic meters per second
*obstructed or horizontal discharge



Air Quality Permit Application

Baghouse

This form is to be submitted, if necessary, along with the Title V (Part 70) Operating Permit, Minor Operating Permit, or the General Permits.

(please complete shaded areas)

Equipment and processes served by this baghouse (please list all equipment and processes):

Equipment and Processes

1. Unit 24: Limestone Day Bins Vent
- 2.
- 3.
- 4.
- 5.

Manufacturer Information:

Manufacturer?	TBD		
Manufacturer date?	TBD	Installation date?	Spring 2008
Manufacturer's designed control efficiency?	0.01 gr/dscf	%	
Type of baghouse (please check one)?			
<input type="checkbox"/> Reverse Air	<input checked="" type="checkbox"/> Pulse Jet	<input type="checkbox"/> Shaker	<input type="checkbox"/> Other (specify) _____
Type of bags?	TBD		
Number of bags?	TBD	Air/cloth ratio?	TBD

Baghouse Operation and Maintenance:

Pressure drop across baghouse?	TBD	inches water (minimum)	TBD	inches water (maximum)
Inlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)
Outlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)

Describe maintenance of baghouse (use of dye test, visual inspections, changing bag frequency, etc.):

Bag changing dependent on application and grain loading.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹		feet	or	695,149.56	meters
Y- Coordinate or Northing: ¹		feet	or	5,019,202.00	meters
Base Elevation of Stack: ¹	1,124	feet	or		meters
Stack Height:	128.00	feet	or		meters
Exit Stack Diameter	1.33	feet	or		meters
Exit Stack Temperature	Ambient	degrees Fahrenheit			

Exit Stack Velocity and/or Flow Rate:

Velocity: 0.33* feet per second meters per second

and/or

Flow Rate: 3,281 actual cubic feet per minute actual cubic meters per second

¹ - Portable asphalt plants, rock crushers, or concrete plants do not have to provide the requested information in these categories.

*obstructed or horizontal discharge



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc): 25

2. Manufacturer: TBD Manufacture date:

3. Model number: TBD

4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)

Diesel FW Booster Pump (Boiler)

5. Maximum designed operating rate (name plate):

or 225.00 million Btus per hour heat input
or horsepower
or kilowatts

6. Check the appropriate box(es) for primary and secondary fuels:

<input type="checkbox"/>	Natural gas	<input type="checkbox"/>	Propane
<input checked="" type="checkbox"/>	Distillate oil	Sulfur content	0.015 Weight percent
<input type="checkbox"/>	Residual oil	Sulfur content	Weight percent
<input type="checkbox"/>	Bituminous Coal	<input type="checkbox"/>	Subbituminous Coal
	Coal sulfur content	<input type="checkbox"/>	Weight percent
<input checked="" type="checkbox"/>	Other (please specify)	Bio diesel	

7. Has a stack test been conducted (check appropriate box)? Yes ☒ No

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:	<input type="text" value=""/>	feet	<input type="text" value="695,265.44"/>	meters
Y- Coordinate or Northing:	<input type="text" value=""/>	feet	<input type="text" value="5,019,234.00"/>	meters
Base Elevation of Stack:	<input type="text" value="1,124"/>	feet	<input type="text" value=""/>	meters
Stack Height:	<input type="text" value="11.00"/>	feet	<input type="text" value=""/>	meters
Exit Stack Diameter	<input type="text" value="0.67"/>	feet	<input type="text" value=""/>	meters
Exit Stack Temperature	<input type="text" value="749.00"/>	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: feet per second meters per second

and/or

Flow Rate: actual cubic feet per minute actual cubic meters per second



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc): 26
2. Manufacturer: TBD Manufacture date:
3. Model number: TBD
4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)

Coal Plant Transfer System

5. Maximum designed operating rate (name plate):

million Btus per hour heat input
or
horsepower
or
kilowatts

6. Check the appropriate box(es) for primary and secondary fuels:

<input type="checkbox"/>	Natural gas	<input type="checkbox"/>	Propane
<input type="checkbox"/>	Distillate oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Residual oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Bituminous Coal	<input type="checkbox"/>	Subbituminous Coal
<input type="checkbox"/>	Coal sulfur content	<input type="checkbox"/>	Weight percent
<input type="checkbox"/>	Coal ash content	<input type="checkbox"/>	Weight percent
<input type="checkbox"/>	Other (please specify)		

7. Has a stack test been conducted (check appropriate box)? Yes ☒ No ☐

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Baghouse

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:		feet	695,048.75	meters
Y- Coordinate or Northing:		feet	5,019,459.50	meters
Base Elevation of Stack:	1,124	feet		meters
Stack Height:	20.00	feet		meters
Exit Stack Diameter	1.27	feet		meters
Exit Stack Temperature	Ambient	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: 59.21 feet per second meters per second

and/or

Flow Rate: 4,500.00 actual cubic feet per minute actual cubic meters per second



Air Quality Permit Application

Baghouse

This form is to be submitted, if necessary, along with the Title V (Part 70) Operating Permit, Minor Operating Permit, or the General Permits.

(please complete shaded areas)

Equipment and processes served by this baghouse (please list all equipment and processes):

Equipment and Processes

1.	Unit 26: Coal Plant Transfer System
2.	
3.	
4.	
5.	

Manufacturer Information:

Manufacturer?	TBD		
Manufacturer date?	TBD	Installation date?	Spring 2008
Manufacturer's designed control efficiency?	0.01 gr/dscf	%	
Type of baghouse (please check one)?			
<input type="checkbox"/> Reverse Air	<input checked="" type="checkbox"/> Pulse Jet	<input type="checkbox"/> Shaker	<input type="checkbox"/> Other (specify)
Type of bags?	TBD		
Number of bags?	TBD	Air/cloth ratio?	TBD

Baghouse Operation and Maintenance:

Pressure drop across baghouse?	TBD	inches water (minimum)	TBD	inches water (maximum)
Inlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)
Outlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)

Describe maintenance of baghouse (use of dye test, visual inspections, changing bag frequency, etc.):

Bag changing dependent on application and grain loading.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹	<input type="text"/>	feet	or	<input type="text" value="695,048.75"/>	meters
Y- Coordinate or Northing: ¹	<input type="text"/>	feet	or	<input type="text" value="5,019,459.50"/>	meters
Base Elevation of Stack: ¹	<input type="text" value="1,124"/>	feet	or	<input type="text"/>	meters
Stack Height:	<input type="text" value="20.00"/>	feet	or	<input type="text"/>	meters
Exit Stack Diameter	<input type="text" value="1.27"/>	feet	or	<input type="text"/>	meters
Exit Stack Temperature	<input type="text" value="Ambient"/>	degrees Fahrenheit			

Exit Stack Velocity and/or Flow Rate:

Velocity: feet per second meters per second

and/or

Flow Rate: actual cubic feet per minute actual cubic meters per second

¹ - Portable asphalt plants, rock crushers, or concrete plants do not have to provide the requested information in these categories.



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc):	27		
2. Manufacturer:	TBD	Manufacture date:	
3. Model number:	TBD		
4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)			
Coal Crusher Building – BSP II			
5. Maximum designed operating rate (name plate):			
		million Btus per hour heat input	
or		horsepower	
or		kilowatts	
6. Check the appropriate box(es) for primary and secondary fuels:			
<input type="checkbox"/>	Natural gas	<input type="checkbox"/>	Propane
<input type="checkbox"/>	Distillate oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Residual oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Bituminous Coal	<input type="checkbox"/>	Subbituminous Coal
	Coal sulfur content	<input type="checkbox"/>	Weight percent
		<input type="checkbox"/>	Coal ash content
		<input type="checkbox"/>	Weight percent
<input type="checkbox"/>	Other (please specify)		
7. Has a stack test been conducted (check appropriate box)?			
	Yes	<input checked="" type="checkbox"/>	No

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Baghouse

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:		feet	695,099.38	meters
Y- Coordinate or Northing:		feet	5,019,452.50	meters
Base Elevation of Stack:	1,124	feet		meters
Stack Height:	95.00	feet		meters
Exit Stack Diameter	2.30	feet		meters
Exit Stack Temperature	Ambient	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: 60.17 feet per second meters per second

and/or

Flow Rate: 15,000 actual cubic feet per minute actual cubic meters per second



Air Quality Permit Application

Baghouse

This form is to be submitted, if necessary, along with the Title V (Part 70) Operating Permit, Minor Operating Permit, or the General Permits.

(please complete shaded areas)

Equipment and processes served by this baghouse (please list all equipment and processes):

Equipment and Processes

1.	Unit 27: Coal Crusher Building – BSP II
2.	
3.	
4.	
5.	

Manufacturer Information:

Manufacturer?	TBD		
Manufacturer date?	TBD	Installation date?	Spring 2008
Manufacturer's designed control efficiency?	0.01 gr/dscf	%	
Type of baghouse (please check one)?			
<input type="checkbox"/> Reverse Air	<input checked="" type="checkbox"/> Pulse Jet	<input type="checkbox"/> Shaker	<input type="checkbox"/> Other (specify)
Type of bags?	TBD		
Number of bags?	TBD	Air/cloth ratio?	TBD

Baghouse Operation and Maintenance:

Pressure drop across baghouse?	TBD	inches water (minimum)	TBD	inches water (maximum)
Inlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)
Outlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)

Describe maintenance of baghouse (use of dye test, visual inspections, changing bag frequency, etc.):

Bag changing dependent on application and grain loading.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹		feet	or	695,099.38	meters
Y- Coordinate or Northing: ¹		feet	or	5,019,452.50	meters
Base Elevation of Stack: ¹	1,124	feet	or		meters
Stack Height:	95.00	feet	or		meters
Exit Stack Diameter	2.30	feet	or		meters
Exit Stack Temperature	Ambient	degrees Fahrenheit			

Exit Stack Velocity and/or Flow Rate:

Velocity: 60.17 feet per second meters per second

and/or

Flow Rate: 15,000 actual cubic feet per minute actual cubic meters per second

¹ - Portable asphalt plants, rock crushers, or concrete plants do not have to provide the requested information in these categories.



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc): 29
2. Manufacturer: TBD Manufacture date:
3. Model number: TBD
4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)

Limestone Precrusher Building

5. Maximum designed operating rate (name plate):

million Btus per hour heat input
or
horsepower
or
kilowatts

6. Check the appropriate box(es) for primary and secondary fuels:

<input type="checkbox"/>	Natural gas	<input type="checkbox"/>	Propane
<input type="checkbox"/>	Distillate oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Residual oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Bituminous Coal	<input type="checkbox"/>	Subbituminous Coal
<input type="checkbox"/>	Coal sulfur content	<input type="checkbox"/>	Weight percent
<input type="checkbox"/>	Coal ash content	<input type="checkbox"/>	Weight percent
<input type="checkbox"/>	Other (please specify)		

7. Has a stack test been conducted (check appropriate box)? Yes ☒ No ☐

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Baghouse

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:	<input type="text"/>	feet	<input type="text" value="695,119.44"/>	meters
Y- Coordinate or Northing:	<input type="text"/>	feet	<input type="text" value="5,019,091.00"/>	meters
Base Elevation of Stack:	<input type="text" value="1,124"/>	feet	<input type="text"/>	meters
Stack Height:	<input type="text" value="85.00"/>	feet	<input type="text"/>	meters
Exit Stack Diameter	<input type="text" value="1.00"/>	feet	<input type="text"/>	meters
Exit Stack Temperature	<input type="text" value="Ambient"/>	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: feet per second meters per second

and/or

Flow Rate: actual cubic feet per minute actual cubic meters per second
*obstructed or horizontal discharge



Air Quality Permit Application

Baghouse

This form is to be submitted, if necessary, along with the Title V (Part 70) Operating Permit, Minor Operating Permit, or the General Permits.

(please complete shaded areas)

Equipment and processes served by this baghouse (please list all equipment and processes):

Equipment and Processes

1. Unit 29: Limestone Precrusher Building
- 2.
- 3.
- 4.
- 5.

Manufacturer Information:

Manufacturer?	TBD		
Manufacturer date?	TBD	Installation date?	Spring 2008
Manufacturer's designed control efficiency?	0.01 gr/dscf	%	
Type of baghouse (please check one)?			
<input type="checkbox"/> Reverse Air	<input checked="" type="checkbox"/> Pulse Jet	<input type="checkbox"/> Shaker	<input type="checkbox"/> Other (specify) _____
Type of bags?	TBD		
Number of bags?	TBD	Air/cloth ratio?	TBD

Baghouse Operation and Maintenance:

Pressure drop across baghouse?	TBD	inches water (minimum)	TBD	inches water (maximum)
Inlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)
Outlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)

Describe maintenance of baghouse (use of dye test, visual inspections, changing bag frequency, etc.):

Bag changing dependent on application and grain loading.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹		feet	or	695,119.44	meters
Y- Coordinate or Northing: ¹		feet	or	5,019,091.00	meters
Base Elevation of Stack: ¹	1,124	feet	or		meters
Stack Height:	85.00	feet	or		meters
Exit Stack Diameter	1.00	feet	or		meters
Exit Stack Temperature	Ambient	degrees Fahrenheit			

Exit Stack Velocity and/or Flow Rate:

Velocity: 0.33* feet per second meters per second

and/or

Flow Rate: 1,759 actual cubic feet per minute actual cubic meters per second

¹ - Portable asphalt plants, rock crushers, or concrete plants do not have to provide the requested information in these categories.

*obstructed or horizontal discharge



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc): 30

2. Manufacturer: TBD Manufacture date:

3. Model number: TBD

4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)

Coal Stockout System

5. Maximum designed operating rate (name plate):

million Btus per hour heat input
or
horsepower
or
kilowatts

6. Check the appropriate box(es) for primary and secondary fuels:

<input type="checkbox"/> Natural gas	<input type="checkbox"/> Propane
<input type="checkbox"/> Distillate oil	Sulfur content <input type="checkbox"/> Weight percent
<input type="checkbox"/> Residual oil	Sulfur content <input type="checkbox"/> Weight percent
<input type="checkbox"/> Bituminous Coal	<input type="checkbox"/> Subbituminous Coal <input type="checkbox"/> Lignite Coal
Coal sulfur content <input type="checkbox"/>	Weight percent <input type="checkbox"/> Coal ash content <input type="checkbox"/> Weight percent <input type="checkbox"/>
<input type="checkbox"/> Other (please specify)	

7. Has a stack test been conducted (check appropriate box)? ☐ Yes ☒ No

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Baghouse

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:		feet	695,016.06	meters
Y- Coordinate or Northing:		feet	5,019,321.50	meters
Base Elevation of Stack:	1,124	feet		meters
Stack Height:	110.00	feet		meters
Exit Stack Diameter	1.80	feet		meters
Exit Stack Temperature	Ambient	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: 55.88 feet per second meters per second

and/or

Flow Rate: 8,532.50 actual cubic feet per minute actual cubic meters per second



Air Quality Permit Application

Baghouse

This form is to be submitted, if necessary, along with the Title V (Part 70) Operating Permit, Minor Operating Permit, or the General Permits.

(please complete shaded areas)

Equipment and processes served by this baghouse (please list all equipment and processes):

Equipment and Processes

1.	Unit 30: Coal Stockout System
2.	
3.	
4.	
5.	

Manufacturer Information:

Manufacturer?	TBD		
Manufacturer date?	TBD	Installation date?	Spring 2008
Manufacturer's designed control efficiency?	0.01 gr/dscf	%	
Type of baghouse (please check one)?			
<input type="checkbox"/> Reverse Air	<input checked="" type="checkbox"/> Pulse Jet	<input type="checkbox"/> Shaker	<input type="checkbox"/> Other (specify) _____
Type of bags?	TBD		
Number of bags?	TBD	Air/cloth ratio?	TBD

Baghouse Operation and Maintenance:

Pressure drop across baghouse?	TBD	inches water (minimum)	TBD	inches water (maximum)
Inlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)
Outlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)

Describe maintenance of baghouse (use of dye test, visual inspections, changing bag frequency, etc.):

Bag changing dependent on application and grain loading.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹	<input type="text"/>	feet	or	<input type="text" value="695,016.06"/>	meters
Y- Coordinate or Northing: ¹	<input type="text"/>	feet	or	<input type="text" value="5,019,321.50"/>	meters
Base Elevation of Stack: ¹	<input type="text" value="1,124"/>	feet	or	<input type="text"/>	meters
Stack Height:	<input type="text" value="110.00"/>	feet	or	<input type="text"/>	meters
Exit Stack Diameter	<input type="text" value="1.80"/>	feet	or	<input type="text"/>	meters
Exit Stack Temperature	<input type="text" value="Ambient"/>	degrees Fahrenheit			

Exit Stack Velocity and/or Flow Rate:

Velocity: feet per second meters per second

and/or

Flow Rate: actual cubic feet per minute actual cubic meters per second

¹ - Portable asphalt plants, rock crushers, or concrete plants do not have to provide the requested information in these categories.



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc): 33

2. Manufacturer: TBD Manufacture date:

3. Model number: TBD

4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)

Diesel FW Booster Pump (Coal Area)

5. Maximum designed operating rate (name plate):

or 225.00 million Btus per hour heat input
or horsepower
or kilowatts

6. Check the appropriate box(es) for primary and secondary fuels:

<input type="checkbox"/>	Natural gas	<input type="checkbox"/>	Propane
<input checked="" type="checkbox"/>	Distillate oil	Sulfur content	0.015 Weight percent
<input type="checkbox"/>	Residual oil	Sulfur content	Weight percent
<input type="checkbox"/>	Bituminous Coal	<input type="checkbox"/>	Subbituminous Coal
	Coal sulfur content	<input type="checkbox"/>	Weight percent
<input checked="" type="checkbox"/>	Other (please specify)	<input type="checkbox"/>	Lignite Coal
		Coal ash content	<input type="checkbox"/>
		Weight percent	
		Biodiesel	

7. Has a stack test been conducted (check appropriate box)? Yes ☒ No

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:		feet	695113.13	meters
Y- Coordinate or Northing:		feet	5019457.00	meters
Base Elevation of Stack:	1,124	feet		meters
Stack Height:	11.00	feet		meters
Exit Stack Diameter	0.67	feet		meters
Exit Stack Temperature	749.00	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: 55.76 feet per second meters per second

and/or

Flow Rate: 1,179.5 actual cubic feet per minute actual cubic meters per second



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc): 34

2. Manufacturer: TBD Manufacture date:

3. Model number: TBD

4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)

Pretreatment Soda Ash Bin Vent

5. Maximum designed operating rate (name plate):

million Btus per hour heat input
or horsepower
or kilowatts

6. Check the appropriate box(es) for primary and secondary fuels:

<input type="checkbox"/>	Natural gas	<input type="checkbox"/>	Propane
<input type="checkbox"/>	Distillate oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Residual oil	<input type="checkbox"/>	Sulfur content Weight percent
<input type="checkbox"/>	Bituminous Coal	<input type="checkbox"/>	Subbituminous Coal
<input type="checkbox"/>	Coal sulfur content	<input type="checkbox"/>	Weight percent
<input type="checkbox"/>	Coal ash content	<input type="checkbox"/>	Weight percent
<input type="checkbox"/>	Other (please specify)		

7. Has a stack test been conducted (check appropriate box)? Yes ☒ No

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Baghouse

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:		feet	695,191.94	meters
Y- Coordinate or Northing:		feet	5,019,029.50	meters
Base Elevation of Stack:	1,124	feet		meters
Stack Height:	60.00	feet		meters
Exit Stack Diameter	0.67	feet		meters
Exit Stack Temperature	Ambient	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: 0.33* feet per second meters per second

and/or

Flow Rate: 600 actual cubic feet per minute actual cubic meters per second
*obstructed or horizontal discharge



Air Quality Permit Application

Baghouse

This form is to be submitted, if necessary, along with the Title V (Part 70) Operating Permit, Minor Operating Permit, or the General Permits.

(please complete shaded areas)

Equipment and processes served by this baghouse (please list all equipment and processes):

Equipment and Processes

1.	Unit 34: Pretreatment Soda Ash Bin Vent
2.	
3.	
4.	
5.	

Manufacturer Information:

Manufacturer?	TBD		
Manufacturer date?	TBD	Installation date?	Spring 2008
Manufacturer's designed control efficiency?	0.01 gr/dscf	%	
Type of baghouse (please check one)?			
<input type="checkbox"/> Reverse Air	<input checked="" type="checkbox"/> Pulse Jet	<input type="checkbox"/> Shaker	<input type="checkbox"/> Other (specify) _____
Type of bags?	TBD		
Number of bags?	TBD	Air/cloth ratio?	TBD

Baghouse Operation and Maintenance:

Pressure drop across baghouse?	TBD	inches water (minimum)	TBD	inches water (maximum)
Inlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)
Outlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)

Describe maintenance of baghouse (use of dye test, visual inspections, changing bag frequency, etc.):

Bag changing dependent on application and grain loading.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹	<input type="text"/>	feet	or	<input type="text" value="695,191.94"/>	meters
Y- Coordinate or Northing: ¹	<input type="text"/>	feet	or	<input type="text" value="5,019,029.50"/>	meters
Base Elevation of Stack: ¹	<input type="text" value="1,124"/>	feet	or	<input type="text"/>	meters
Stack Height:	<input type="text" value="60.00"/>	feet	or	<input type="text"/>	meters
Exit Stack Diameter	<input type="text" value="0.67"/>	feet	or	<input type="text"/>	meters
Exit Stack Temperature	<input type="text" value="Ambient"/>	degrees Fahrenheit			

Exit Stack Velocity and/or Flow Rate:

Velocity: feet per second meters per second

and/or

Flow Rate: actual cubic feet per minute actual cubic meters per second

¹ - Portable asphalt plants, rock crushers, or concrete plants do not have to provide the requested information in these categories.

*obstructed or horizontal discharge



Air Quality Permit Application Form

Miscellaneous Process

This form is to be submitted, if necessary, along with
the Title V (Part 70) Operating Permit or Minor Operating Permit.
(please complete shaded areas)

1. Facility identification (i.e., Boiler #1, Unit #1, etc): 35
2. Manufacturer: TBD Manufacture date:
3. Model number: TBD
4. Type (i.e., steam boiler, simple cycle combustion turbine, generator, etc.)

Pretreatment Lime Bin Vent

5. Maximum designed operating rate (name plate):

million Btus per hour heat input
or
horsepower
or
kilowatts

6. Check the appropriate box(es) for primary and secondary fuels:

<input type="checkbox"/> Natural gas	<input type="checkbox"/> Propane
<input type="checkbox"/> Distillate oil	Sulfur content <input type="checkbox"/> Weight percent
<input type="checkbox"/> Residual oil	Sulfur content <input type="checkbox"/> Weight percent
<input type="checkbox"/> Bituminous Coal	<input type="checkbox"/> Subbituminous Coal <input type="checkbox"/> Lignite Coal
Coal sulfur content <input type="checkbox"/>	Weight percent <input type="checkbox"/> Coal ash content <input type="checkbox"/> Weight percent <input type="checkbox"/>
<input type="checkbox"/> Other (please specify)	

7. Has a stack test been conducted (check appropriate box)? ☐ Yes ☒ No

If a stack test has been conducted, please attach a copy of the most recent stack test report to this application. If the Department already has a copy of the most recent stack test, please specify the date of most recent stack test.

Date of most recent stack test:

Control Equipment: If applicable, types of air pollution control equipment (Examples: baghouse, cyclone, wet scrubber, electrostatic precipitator, thermal oxidizer, miscellaneous control device, etc.).

Baghouse

Please complete the appropriate air quality permit application form for each type of control equipment that controls air emissions from this operation.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting:		feet	695,185.94	meters
Y- Coordinate or Northing:		feet	5,019,028.00	meters
Base Elevation of Stack:	1,124	feet		meters
Stack Height:	60.00	feet		meters
Exit Stack Diameter	0.67	feet		meters
Exit Stack Temperature	Ambient	degrees Fahrenheit		

Exit Stack Velocity and/or Flow Rate:

Velocity: 0.33* feet per second meters per second

and/or

Flow Rate: 600 actual cubic feet per minute actual cubic meters per second
*obstructed or horizontal discharge



Air Quality Permit Application

Baghouse

This form is to be submitted, if necessary, along with the Title V (Part 70) Operating Permit, Minor Operating Permit, or the General Permits.

(please complete shaded areas)

Equipment and processes served by this baghouse (please list all equipment and processes):

Equipment and Processes

1.	Unit 35: Pretreatment Lime Bin Vent
2.	
3.	
4.	
5.	

Manufacturer Information:

Manufacturer?	TBD		
Manufacturer date?	TBD	Installation date?	Spring 2008
Manufacturer's designed control efficiency?	0.01 gr/dscf	%	
Type of baghouse (please check one)?			
<input type="checkbox"/> Reverse Air	<input checked="" type="checkbox"/> Pulse Jet	<input type="checkbox"/> Shaker	<input type="checkbox"/> Other (specify) _____
Type of bags?	TBD		
Number of bags?	TBD	Air/cloth ratio?	TBD

Baghouse Operation and Maintenance:

Pressure drop across baghouse?	TBD	inches water (minimum)	TBD	inches water (maximum)
Inlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)
Outlet Temperature?	Ambient	Fahrenheit (minimum)	Ambient	Fahrenheit (maximum)

Describe maintenance of baghouse (use of dye test, visual inspections, changing bag frequency, etc.):

Bag changing dependent on application and grain loading.

Stack Information: If this application is a renewal, contact the air program. We may have this information.

X- Coordinate or Easting: ¹	<input type="text"/>	feet	or	<input type="text" value="695,185.94"/>	meters
Y- Coordinate or Northing: ¹	<input type="text"/>	feet	or	<input type="text" value="5,019,028.00"/>	meters
Base Elevation of Stack: ¹	<input type="text" value="1,124"/>	feet	or	<input type="text"/>	meters
Stack Height:	<input type="text" value="60.00"/>	feet	or	<input type="text"/>	meters
Exit Stack Diameter	<input type="text" value="0.67"/>	feet	or	<input type="text"/>	meters
Exit Stack Temperature	<input type="text" value="Ambient"/>	degrees Fahrenheit			

Exit Stack Velocity and/or Flow Rate:

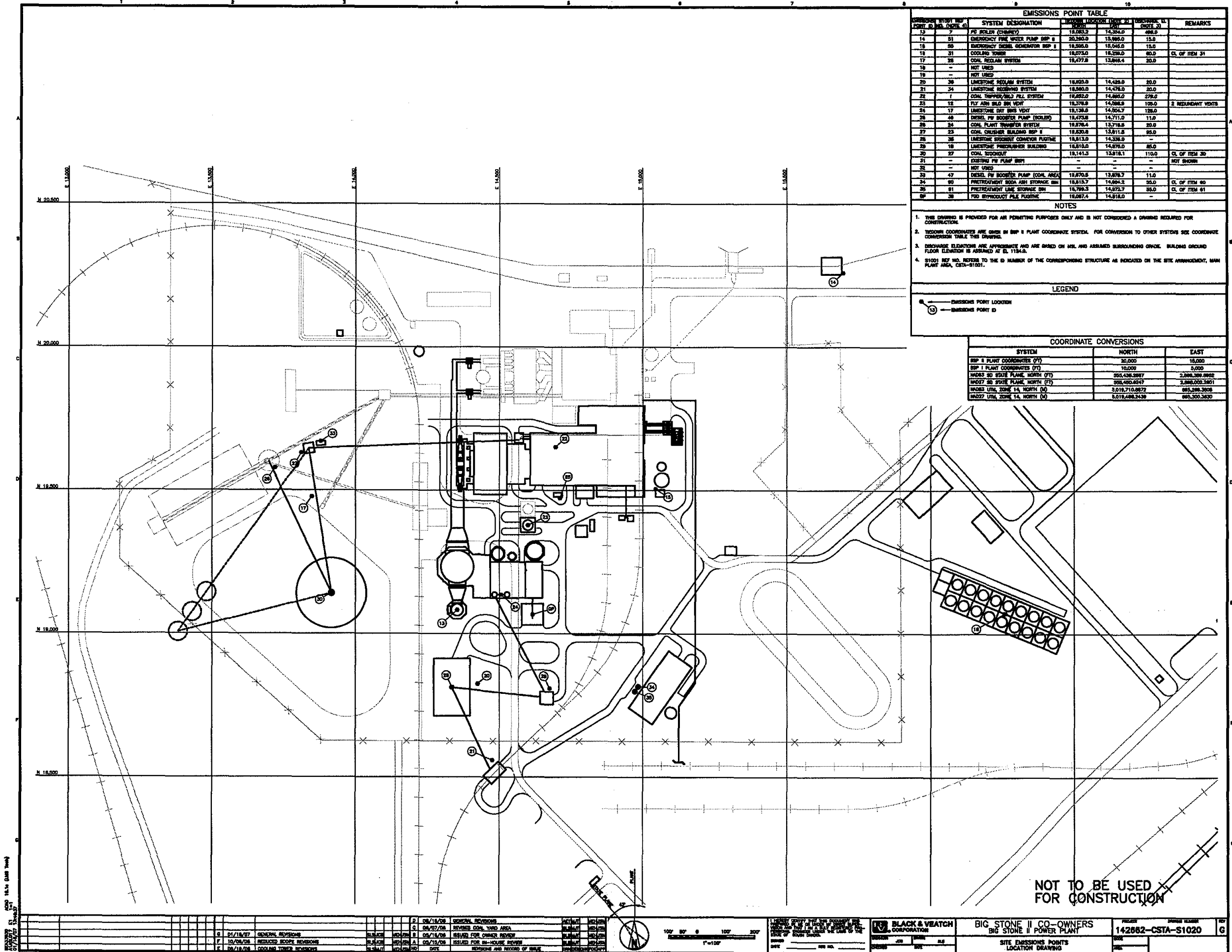
Velocity: feet per second meters per second

and/or

Flow Rate: actual cubic feet per minute actual cubic meters per second

¹ - Portable asphalt plants, rock crushers, or concrete plants do not have to provide the requested information in these categories.

*obstructed or horizontal discharge



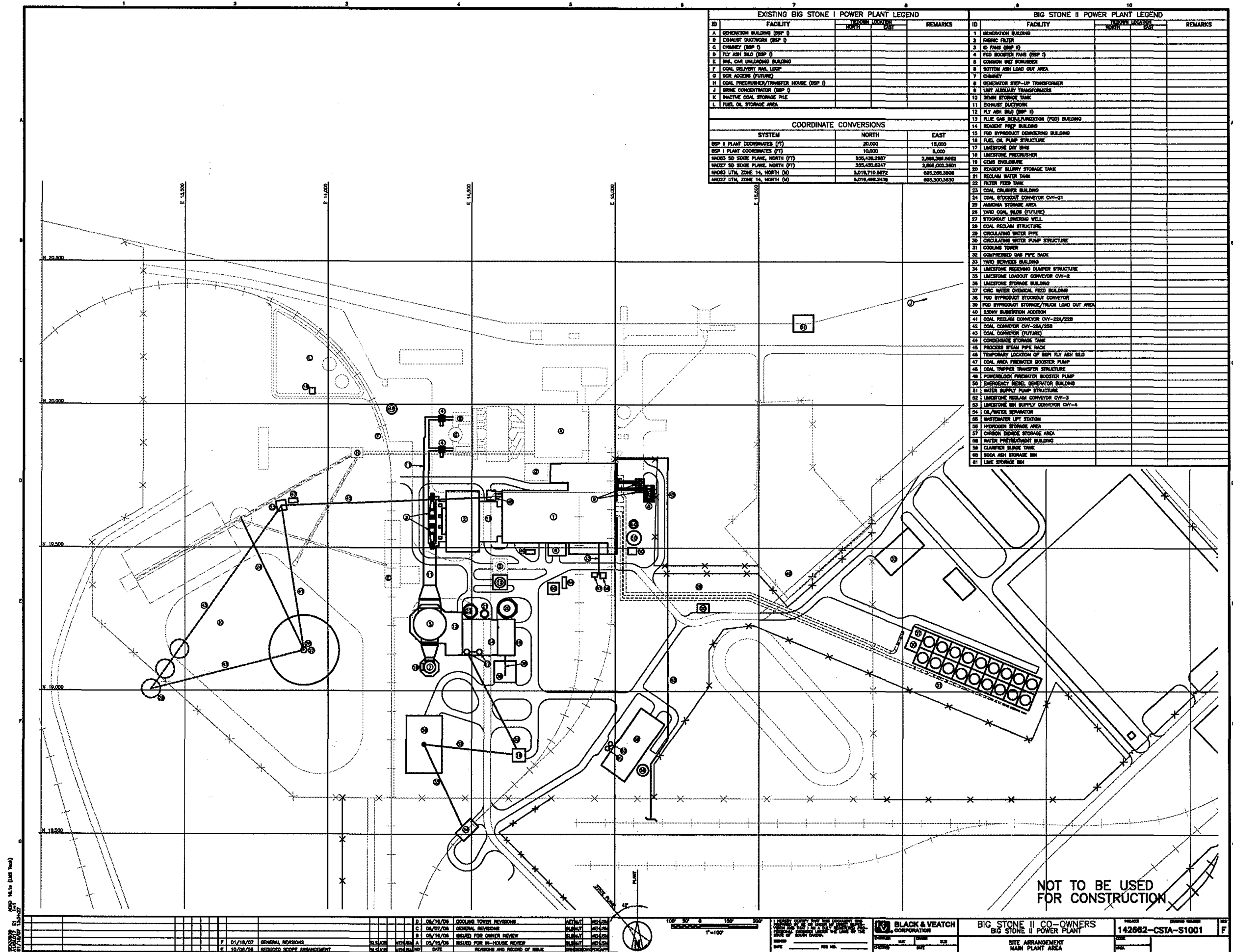
EMISSIONS POINT TABLE					
POINT NO.	SYSTEM DESIGNATION	DISCHARGE ELEVATION (FT)	DISCHARGE DIRECTION	DISCHARGE RATE (GPM)	REMARKS
13	PC WELDER (CHIMNEY)	18,282.0	14,324.0	488.0	
14	EMERGENCY FIRE WATER PUMP BSP 8	20,280.0	15,985.0	15.0	
18	EMERGENCY DIESEL GENERATOR BSP 1	18,580.0	15,045.0	15.0	
18	EMERGENCY DIESEL GENERATOR BSP 2	18,580.0	15,045.0	15.0	
18	COOLING TOWER	18,075.0	16,258.0	80.0	CL OF ITEM 31
17	COAL WELDER SYSTEM	18,277.8	13,848.4	20.0	
19	NOT USED				
20	NOT USED				
20	LIMESTONE WELDER SYSTEM	18,282.0	14,425.0	20.0	
21	LIMESTONE RECEIVING SYSTEM	18,580.0	14,478.0	20.0	
22	COAL TRIPPER/BUILD PUL SYSTEM	18,822.0	14,880.0	278.0	
23	FLY ASH BUILD BIN VENT	18,378.8	14,586.9	105.0	2 REDUNDANT VENTS
24	LIMESTONE DRY BIN VENT	18,138.0	14,804.7	128.0	
26	DIESEL PW BOOSTER PUMP (BOLLER)	18,475.8	14,711.0	11.0	
26	COAL PLANT TRIMMER SYSTEM	18,578.4	13,718.8	20.0	
27	COAL CRUSHER BUILDING BSP 1	18,530.8	13,811.8	55.0	
28	LIMESTONE STOCKPILE CONVEYOR FLUXING	18,813.0	14,338.0	—	
29	LIMESTONE PRECRUSHER BUILDING	18,810.0	14,878.0	85.0	
30	COAL STOCKPILE	18,141.2	13,818.1	110.0	CL OF ITEM 30
31	EXISTING PW PUMP BSP1	—	—	—	NOT SHOWN
32	NOT USED				
32	DIESEL PW BOOSTER PUMP (COAL AREA)	18,075.8	13,878.7	11.0	
34	PRETREATMENT BODIA ASH STORAGE BIN	18,815.7	14,884.2	55.0	CL OF ITEM 30
36	PRETREATMENT LIME STORAGE BIN	18,788.3	14,872.7	55.0	CL OF ITEM 31
39	P20 BYPRODUCT PILE FLUXING	18,887.4	14,818.0	—	

- NOTES
- THIS DRAWING IS PROVIDED FOR AIR PERMITTING PURPOSES ONLY AND IS NOT CONSIDERED A DRAWING REQUIRED FOR CONSTRUCTION.
 - GROUND COORDINATES ARE GIVEN IN BSP 8 PLANT COORDINATE SYSTEM. FOR CONVERSION TO OTHER SYSTEMS SEE COORDINATE CONVERSION TABLE THIS DRAWING.
 - DISCHARGE ELEVATIONS ARE APPROXIMATE AND ARE BASED ON MSL AND ASSUMED SURROUNDING GROUND. BUILDING GROUND FLOOR ELEVATION IS ASSUMED AT EL. 1124.0.
 - 31001 REF NO. REFERS TO THE ID NUMBER OF THE CORRESPONDING STRUCTURE AS INDICATED ON THE SITE ARRANGEMENT, MAIN PLANT AREA, CSDA-31001.

LEGEND		
—	EMISSIONS POINT LOCATION	
13	EMISSIONS POINT ID	

COORDINATE CONVERSIONS		
SYSTEM	NORTH	EAST
BSP 8 PLANT COORDINATES (FT)	20,000	10,000
BSP 1 PLANT COORDINATES (FT)	10,000	5,000
WADSWORTH STATE PLANE, NORTH (FT)	255,436.3887	2,888,389.8862
WADSWORTH STATE PLANE, NORTH (FT)	255,480.6247	2,888,002.3801
WADSWORTH STATE PLANE, NORTH (M)	5,018,710.8677	885,286.3808
WADSWORTH STATE PLANE, NORTH (M)	5,018,488.3438	885,355.3430

REVISION	DATE	BY	CHKD	DESCRIPTION
1	01/18/07	GENERAL REVISIONS		
2	05/02/08	REVISED COAL YARD AREA		
3	05/18/08	ISSUED FOR OWNER REVIEW		
4	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
5	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
6	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
7	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
8	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
9	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
10	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
11	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
12	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
13	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
14	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
15	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
16	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
17	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
18	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
19	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
20	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
21	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
22	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
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25	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
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28	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
29	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
30	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
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48	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
49	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
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73	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
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76	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
77	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
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79	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
80	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
81	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
82	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
83	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
84	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
85	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
86	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
87	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
88	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
89	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
90	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
91	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
92	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
93	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
94	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
95	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
96	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
97	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
98	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
99	05/15/08	ISSUED FOR IN-HOUSE REVIEW		
100	05/15/08	ISSUED FOR IN-HOUSE REVIEW		



STACKID		Size	Size Units	ACFM	Discharge Type*
1	B & W steam generator (old)	5800	mmBlu/hr	1,323,845	V
2	1973 combustion steam boiler No. 2 FO	210	mmBlu/hr	42,047	V
3	1961 Bros steam heating boiler No. 2 FO	98	mmBlu/hr	19,620	V
4	1974 WPS emergency generator No. 2 FO	1341.022	HP	2,860	D
13	Chimney - BSP II	6,000.00	mmBlu/hr		V
14	Emergency Fire Water Pump - BSP II	420.00	HP	2486.2	V
15	Emergency Diesel Generator - BSP II	2,220.00	HP	10,650.00	V
25	Diesel FW Booster Pump (Boiler)	225.00	HP	1179.5	V
31EFP	Existing Fire Pump	3.24	mmBlu/hr	2,500.00	V
33	Diesel FW Booster Pump (Coal Area)	225	HP		V

STACKID	Name	PM10	Emissions (lb/hr)	VOC	PM10	Emissions (t/yr)	VOC	Hours of Operation
1	B & W steam generator (old)	1,508.00	458.20	37.12	6,605.04	2,006.92	162.59	8760
2	1973 combustion steam boiler No. 2 FO	2.10	7.50	0.30	9.20	32.85	1.31	8760
3	1961 Bros steam heating boiler No. 2 FO	0.98	3.50	0.14	4.29	15.33	0.61	8760
4	1974 WPS emergency generator No. 2 FO	0.94	7.38	0.95	4.11	32.31	4.14	8760
13	Chimney - BSP II	180.00	900.00	21.60	788.40	3,942.00	94.61	8760
14	Emergency Fire Water Pump - BSP II	0.14	2.41	1.39	0.03	0.60	0.35	500
15	Emergency Diesel Generator - BSP II	0.73	12.73	11.75	0.18	3.18	2.94	500
25	Diesel FW Booster Pump (Boiler)	0.07	1.29	0.74	0.02	0.32	0.19	500
31EFP	Existing Fire Pump	1.00	3.08	1.17	0.25	0.77	0.29	500
33	Diesel FW Booster Pump (Coal Area)	0.07	1.29	0.74	0.02	0.32	0.19	500

STACKID	Name	PM10	CO	VOC	PM10	CO	VOC	Hours of Operation
1	B & W steam generator (old)	0.26 lb/MMBtu	0.079 lb/MMBtu	0.0064 lb/MMBtu	0.0064 lb/MMBtu	1.43E-03 lb/MMBtu	0.007	filterable only hardcoded to 0.01 instead of calculated 0.007
2	1973 combustion steam boiler No. 2 FO	0.01 lb/MMBtu	0.04 lb/MMBtu	0.04 lb/MMBtu	1.43E-03 lb/MMBtu	7.05E-04 lb/MMBtu	0.007	hardcoded to 0.01 instead of calculated 0.007
3	1961 Bros steam heating boiler No. 2 FO	0.01 lb/MMBtu	0.04 lb/MMBtu	0.04 lb/MMBtu	1.43E-03 lb/MMBtu	7.05E-04 lb/MMBtu	0.007	hardcoded to 0.01 instead of calculated 0.007
4	1974 WPS emergency generator No. 2 FO	0.0007 lb/MMBtu	0.0007 lb/MMBtu	0.0007 lb/MMBtu	0.0007 lb/MMBtu	0.0007 lb/MMBtu	0.0007	hardcoded to 0.01 instead of calculated 0.007
13	Chimney - BSP II	0.03 lb/MMBtu	0.15 lb/MMBtu	0.15 lb/MMBtu	0.03 lb/MMBtu	0.15 lb/MMBtu	0.15	assumed half of NMHC+NOX factor was NMHC
14	Emergency Fire Water Pump - BSP II	0.15 gblp-hr	2.60 gblp-hr	2.60 gblp-hr	1.50 gblp-hr	2.40 gblp-hr	1.50	assumed half of NMHC+NOX factor was NMHC
15	Emergency Diesel Generator - BSP II	0.15 gblp-hr	2.60 gblp-hr	2.60 gblp-hr	1.50 gblp-hr	2.40 gblp-hr	1.50	assumed half of NMHC+NOX factor was NMHC
25	Diesel FW Booster Pump (Boiler)	0.15 gblp-hr	2.60 gblp-hr	2.60 gblp-hr	1.50 gblp-hr	2.40 gblp-hr	1.50	assumed half of NMHC+NOX factor was NMHC
31EFP	Existing Fire Pump	0.31 lb/MMBtu	0.95 lb/MMBtu	0.95 lb/MMBtu	0.31 lb/MMBtu	0.95 lb/MMBtu	0.31	assumed half of NMHC+NOX factor was NMHC
33	Diesel FW Booster Pump (Coal Area)	0.15 gblp-hr	2.60 gblp-hr	2.60 gblp-hr	1.50 gblp-hr	2.40 gblp-hr	1.50	assumed half of NMHC+NOX factor was NMHC

Heating Value - Liquid Fuels - Distillate Oil
 Old Units Fuel Oil - % Sulfur
 Natural gas heating value

140,000 Btu/gal
 0.05 % Sulfur
 1,020 MMMBtu/MMcf

STACKID	Name	PM	CO	VOC
2	1973 combustion steam boiler No. 2 FO	1 lb/1000 gal	5 lb/1000 gal	0.2 lb/1000 gal
3	1961 Bros steam heating boiler No. 2 FO	1 lb/1000 gal	5 lb/1000 gal	0.2 lb/1000 gal

Big Stone II
Emissions Sources
Coal Handling System
Emission Points - Daily

Stack ID	Description	passive, non vertical?	acfm	dscfm	hr	Control % or Natural Limits	Factor (PM10)	Factor (PM2.5)	Units	PM10 (lb/hr)	PM10 (ton/yr)	PM2.5 (lb/hr)	PM2.5 (ton/yr)
7a d hr	Rotary car dumper building	not passive, vertical	122,000	147,690	5000	18 hours/day	0.010	0.010	gr/dscf	9.49	31.65	9.49	31.65
8	Fuel transfer house	not passive, vertical	15,650	18,945	8760		0.020	0.020	gr/dscf	3.25	14.23	3.25	14.23
9	North fuel conveying systems	not passive, non vertical	14,200	14,440	8760		0.01	0.010	gr/dscf	1.24	5.42	1.24	5.42
10	South fuel conveying systems	not passive, non vertical	16,500	16,779	8760		0.01	0.010	gr/dscf	1.44	6.30	1.44	6.30
17	Coal Reclaim System	passive, vertical	6,750	8,171	8760		0.01	0.010	gr/dscf	0.58	2.53	0.58	2.53
22	Coal Tripper/Silo Fill System	passive, vertical	35,500	36,099	8760		0.01	0.010	gr/dscf	3.04	13.33	3.04	13.33
26	Coal Plant Transfer System	passive, vertical	4,500	5,448	8760		0.01	0.010	gr/dscf	0.39	1.69	0.39	1.69
27	Coal Crusher Building - BSP	passive, vertical	15,000	18,159	8760		0.01	0.010	gr/dscf	1.29	5.63	1.29	5.63
30	Coal Stockout	passive, vertical	8532.5	10,329	5000	18 hours/day	0.01	0.010	gr/dscf	0.66	2.21	0.66	2.21
IAC WE	Inactive Coal Pile Wind Erosion				8760	25%			lb/VMT	0.53	2.33	0.08	0.35
IAC PM	Inactive Coal Pile Maintenance				8760	50%	1.34	0.13	lb/VMT	0.60	1.91	0.06	0.19
IAC LI	Inactive Coal Pile Load-in	3600.0 tons/hr				25%	0.000114	0.000017	lb/ton	0.31	0.03	0.05	4.52E-03

Fly Ash Handling System

Emission Points

Stack ID	Description	passive, non vertical?	acfm	dscfm	hr	Factor (PM10)	Factor (PM2.5)	Units	PM10 (lb/hr)	PM10 (ton/yr)	PM2.5 (lb/hr)	PM2.5 (ton/yr)
11	Fly ash storage silo	not passive, non vertical	3,520.00	4,261	8760	0.01	0.01	gr/dscf	0.37	1.60	0.37	1.60
23ab	Fly ash silo bin vent	not passive, vertical	9,000.00	10,895	8760	0.01	0.01	gr/dscf	0.93	4.09	0.93	4.09
34	Pretreatment Soda Ash Bin V	not passive, non vertical	600	726	8760	0.01	0.01	gr/dscf	0.06	0.27	0.06	0.27
35	Pretreatment Lime Bin Vent	not passive, non vertical	600	726	8760	0.01	0.01	gr/dscf	0.06	0.27	0.06	0.27

Limestone Handling System

Emission Points

Stack ID	Description	passive, non vertical?	acfm	dscfm	hr	Factor (PM10)	Factor (PM2.5)	Units	PM10 (lb/hr)	PM10 (ton/yr)	PM2.5 (lb/hr)	PM2.5 (ton/yr)
12	Lime storage silo	not passive, non vertical	1,239.08	1,500.00	8760	0.01	0.01	gr/dscf	0.13	0.56	0.13	0.56
20	Limestone Reclaim System	passive, vertical	6,000.00	7,263.43	8760	0.01	0.01	gr/dscf	0.62	2.73	0.62	2.73
21	Limestone Receiving System	passive, vertical	5,000.00	6,052.86	8760	0.01	0.01	gr/dscf	0.52	2.27	0.52	2.27
24	Limestone Dav Bins Vent	not passive, non vertical	3,281.00	3,971.88	8760	0.01	0.01	gr/dscf	0.34	1.49	0.34	1.49
29	Limestone Precrusher Buildin	not passive, non vertical	1,759.00	2,129.39	8760	0.01	0.01	gr/dscf	0.18	0.80	0.18	0.80
28	Limestone stackout conveyor	11.00 tph			8760	3.32E-04	5.02E-05	lb/ton	0.0036	0.02	0.001	0.00
LS WE	Limestone Pile Wind Erosion (cover)				8760				0.04	0.17	0.01	0.03

Gypsum Handling System

Emission Points

Stack ID	Description	Thruput	Units	Factor (lb PM10/ton)	Factor (lb PM2.5/ton)	hr	PM10 (lb/hr)	PM10 (ton/yr)	PM2.5 (lb/hr)	PM2.5 (ton/yr)
GP WE	Gypsum Pile Wind Erosion					8760	0.01	0.04	0.001	0.00628
GP LI	Gypsum Pile Load-in	100 tons/hr		0.0003	5.02E-05	8760	0.03	0.15	0.01	0.02200
GP LO	Gypsum Pile Load-out	82.5 tons/hr		0.0003	5.02E-05	8760	0.03	0.12	0.00414	0.01815

Landfill System

Emission Points

Stack ID	Description	Thruput	Units	Factor (lb PM10/ton)	Factor (lb PM2.5/ton)	Control %	hr	PM10 (lb/hr)	PM10 (ton/yr)	PM2.5 (lb/hr)	PM2.5 (ton/yr)
LF WE	Landfill Wind Erosion						8760	0.66	2.87	0.10	0.43
LF LI	Landfill Load-in	150.00 tph		0.0003	5.02E-05	50%	8760	0.02	0.11	0.0038	0.02
LF PM	Landfill Pile Maintenance	0.56 VMT/hr		0.96	0.10	50%	8760	0.27	0.86	0.03	0.09

Drop Equation for load in/load out: From AP-42, Section 13.2.4 (1/95)

$$E = k (0.0032) (U/5)^{1.3} (M/2)^{1.4}$$

	pm10	pm2.5
k =	0.35	0.053
U = mean wind speed (mph)	11.10	
M = material moisture content		
	coal	21.42
	ash	1.00
	gypsum	10.00
	landfill	10.00
E (lb PM10/ton)	Limestone	10.00
	coal	1.14E-04
	ash	8.33E-03
	gypsum	3.32E-04
	landfill	3.32E-04
	Limestone	3.32E-04

New baghouses (grain loading)	0.01	gr/dscf	Skidmore
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Coal	Limestone	Gypsum	Ash
% moisture (for piles)	Density (lb/ft3)	10.00	moisture
21.42	85	65.00	Moisture %
density (lb/ft3)	Moisture %	100	for dry loadout
45	10.00	82.5	load in tph
coal pile load in tph			load out tph
3,600.00			1.00

Wind Erosion - See related spreadsheets: From AP-42, Section 13.2.5 (1/95)

	Height ft	Density lb/ft3	Amount tons	Area ft2	Moisture %	Angle of Slope	Threshold Friction	PM10 lb/hr	PM10 tpy	PM2.5 lb/hr	PM2.5 tpy
LS WE Limestone Pile Wind Erosion	53.00	85.00	15,000	20,106	10.00	26.6	0.62	0.04	0.17	0.01	0.03
IAC WE Inactive Coal Pile Wind Erosion	45.00	45.00	697,000	566,280.00	21.42	26.6	1.02	0.71	3.11	0.11	0.47
GP WE Gypsum Pile Wind Erosion	25.00	65.00	9,572	5,000	10.00	26.6	0.62	0.01	0.04	0.00	0.01
LF WE Landfill Wind Erosion	15.00	65.00	1,300,000	522,720	10.00	26.6	1.02	0.66	2.87	0.10	0.43

Pile Maintenance - Unpaved Haul Road Emissions: From AP-42, Section 13.2.2 (2/03)

Emission Factor =>

$$E_{hourly} = k(s/12)^a (W/3)^b$$

$$\text{Vehicle Miles Traveled (VMT)} = 2 * \text{Length of Segment} * \text{Maximum Hourly Amount Pushed}$$

$$E_{annual} = k(s/12)^a (W/3)^b * ((365-P)/365)$$

Weight of Vehicle

Where:	E = Emission factor (pounds per VMT)		
	PM10	PM2.5	
k = constant (PM10)	1.5	0.15	Taken from Table 13.2.2-2 in AP-42
a = constant	0.9	0.9	Taken from Table 13.2.2-2 in AP-42
b = constant	0.45	0.45	Taken from Table 13.2.2-2 in AP-42
s = surface material silt content (%)	2.2		AP-42 table 13.2.4-1, 1/95, coal fired power plant coal as received
p = Number of days with 0.01" of precipitation	100	100	
Maximum hourly amount pushed -scraper =	412.50	tons	Inactive Coal Pile
Maximum hourly amount pushed -wheel loader =	122.85	tons	Landfill
Capacity of dozer =	25	tons	Inactive Coal Pile
maximum speed (estimate)	2.50	mph	
Length of Road Segment =	0.08	miles	Inactive Coal Pile and Landfill Distances

	# sources	W tons	VMT/hr	PM10 hourly lb/VMT	PM10 lb/hr	PM10 annual lb/VMT	PM10 tpy	PM2.5 hourly lb/VMT	PM2.5 lb/hr	PM2.5 annual lb/VMT	PM2.5 tpy
IAC PM Inactive Coal Pile Maintenance	36.00	70.00	0.89	1.34	1.20	0.98	3.82	0.13	0.12	0.10	0.38
LF PM Landfill Pile Maintenance	23.00	33.00	0.56	0.96	0.54	0.70	1.72	0.10	0.05	0.07	0.17

Haul Road Emission Calculations

Paved Haul Road Emission Equations, From AP-42 Section 13.2.1 (12/03)

Emission Factor => E = $[k * (sL/2)^{0.65} * (W/3)^{1.5} - C] * (1 - (P/4N))$

Where:

Control for watering of paved roads per BACM

50%

E = Emission factor (pounds per VMT)

C = emission factor for brake /tire wear

0.00047

k = constant (PM10)

0.016 Taken from Table 13.2.1-1 in AP-42

k = constant (PM2.5)

0.0024 Taken from Table 13.2.1-1 in AP-42

Table 13.2.1-3, ubiquitous baseline

sL = Silt loading (g/m2)

0.6 for <500 trucks per day

W = mean vehicle weight (tons)

Varies by truck type

P = Number of days with 0.01" of precipitation

100 Figure 13.2.1-2

N = number of days in averaging period

365 365 days per year

Description	Truck Type	Truck Weight		NH PM10 lb /VMT	NH PM2.5 lb /VMT	NAAQS Hourly trips/hr	NAAQS Annual trips/hr	Increment Hourly trips/hr
		Loaded tons	Unloaded tons					
Tires	Truck	40	15	0.0943	0.0140	1.00	1.00	-
Limestone	Truck	40	15	0.0943	0.0140	3.00	1.15	2.0000
Bottom Ash Unit 1	Truck	40	15	0.0943	0.0140	2.00	1.58	-
Bottom Ash Unit 2	Truck	40	15	0.0943	0.0140	1.00	0.50	1.0000
Fly Ash Unit 1	Truck	40	15	0.0943	0.0140	1.00	0.84	-
Fly Ash Unit 2	Truck	40	15	0.0943	0.0140	3.00	2.01	3.0000
Gypsum	Truck	40	15	0.0943	0.0140	5.00	2.47	3.0000
Landfill	Articulated truck	76	36	0.2746	0.0410	11.00	7.40	4.5000

	Loaded	Unloaded	Load
	tons	tons	tons
Truck	40	15	25
Scraper	89	51	38
Articulated truck	76	36	40

	naaqs	naaqs	increment	increment
	trucks	trucks	trucks	trucks
	per day	per year	per day	per year
Tires	1	8,760	-	-
Limestone	3	10,100	2	10,100
Bottom Ash Unit 1	2	13,800	-	-
Bottom Ash Unit 2	1	4,400	1	4,400
Fly Ash Unit 1	1	7,400	-	-
Fly Ash Unit 2	3	17,600	3	17,600
Gypsum	5	21,600	3	21,600
Landfill	11	64,800	9	43,600

Increment Annual	# volume sources	27	9	20	5	11	9	6	4	5	59	8	52
trips/hr	length (m)	475.86	145.61	347.46	73.15	180.94	134.77	81.44	54.86	68.52	1,055.76	119.87	918.63
	ID	A	B	C	D	E	F	H	I	J	L	M	T
-		0	0	2	0	0	1	0	0	0	0	0	2
1.1530		2	1	2	1	1	0	0	0	0	0	0	0
-		2	1	2	1	1	0	0	0	0	0	0	0
0.5023		2	1	2	1	1	0	0	1	1	0	0	0
-		2	1	2	1	1	0	1	0	1	0	0	0
2.0091		2	1	2	1	1	0	0	1	1	0	0	0
2.4658		2	0	2	0	2	0	0	0	0	0	1	0
4.9772		0	0	0	0	0	0	0	0	0	2	0	0
PM10	PM10 lb /VMT	1.13	0.47	1.32	0.47	0.66	0.09	0.09	0.19	0.28	0.55	0.09	0.19
PM2.5	PM2.5 lb/VMT	0.17	0.07	0.20	0.07	0.10	0.01	0.01	0.03	0.04	0.08	0.01	0.03
naaqs													
hourly	VMT/hr	8.87	0.90	6.91	0.45	2.25	0.08	0.05	0.14	0.21	14.43	0.37	1.14
nh10	PM10 lb /segment	3.10E-02	9.48E-03	3.26E-02	8.58E-03	1.93E-02	8.78E-04	7.96E-04	3.22E-03	4.02E-03	6.72E-02	4.39E-03	2.07E-03
nh25	PM2.5 lb/segment	4.59E-03	1.40E-03	4.82E-03	1.27E-03	2.85E-03	1.30E-04	1.18E-04	4.76E-04	5.95E-04	1.00E-02	6.50E-04	3.07E-04
naaqs													
annual	VMT/hr	5.06	0.55	4.12	0.28	1.24	0.08	0.04	0.09	0.14	9.71	0.18	1.14
na25	PM2.5 lb/segment	2.62E-03	8.54E-04	2.88E-03	7.72E-04	1.57E-03	1.30E-04	9.95E-05	2.99E-04	3.99E-04	6.74E-03	3.21E-04	3.07E-04
Increment													
hourly	VMT/hr	5.32	0.54	3.89	0.27	1.35	-	-	0.14	0.17	5.90	0.22	-
ih10	PM10 lb /segment	1.86E-02	5.69E-03	1.83E-02	5.15E-03	1.16E-02	0.00E+00	0.00E+00	3.22E-03	3.21E-03	2.75E-02	2.64E-03	0.00E+00
increment													
annual	VMT/hr	0.21	0.02	0.15	0.01	0.06	-	-	0.01	0.01	0.36	0.01	-
ia10	PM10 lb /segment	7.19E-04	2.15E-04	7.19E-04	2.15E-04	5.04E-04	0.00E+00	0.00E+00	1.47E-04	1.47E-04	1.70E-03	1.45E-04	0.00E+00

Input Values in Green Highlighted Cells.

$$u_s^+ = u_{10}^+ \frac{u_s}{u_r}$$

For this pile, use Pile B1 from Figure 13.2.5-2

Table 13.2.5-3 - Subarea Distribution for regimes of u_s/u_r

Active	Surface Area	Pile Subarea	% of Pile Surface	Area
	20,106.19 ft ²	0.2a	5	
	1,867.93 m ²	0.2b	2	0.2 672.45
		0.2c	29	0.6 933.96
		0.6a	26	0.9 261.51
		0.6b	24	
		0.9	14	

Threshold Friction Velocity = 0.62

<http://www5.ncdc.noaa.gov/documentlibrary/pdf/wind1996.pdf>

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Huron	DIR NW	NW	NNW	NNW	NW	NW	N	N	SSE	SSE	SSE	SSE	SSE
SPD	12	11	13	13	13	11	11	11	11	11	12	11	12
mph	PGU 56	62	55	64	60	63	82	76	54	52	58	60	82
m/sec	PGU 25.20	27.90	24.75	28.80	27.00	28.35	36.90	34.20	24.30	23.40	26.10	27.00	36.90

Annual Peak Gust Analysis

Wind Speed	0.2	0.6	0.9
36.90	0.74	2.21	3.32
$u^* - u_t^*$ (m/s)	P (g/m ² /yr)	Area (m ²)	PM10 E (g/yr)
0.12	3.76	672.45	1,263.40
1.59	187.22	933.96	87,427.59
2.70	490.66	261.51	64,155.95
			PM2.5 E (g/yr)
			189.51
			13,114.14
			9,623.39
			g/yr
			22,927.04
			lb/yr
			50.54
			tpy
			0.03

Input Values in Green Highlighted Cells.

$$u_s^+ = u_{10}^+ \frac{u_s}{u_r}$$

For this pile, use Pile B1 from Figure 13.2.5-2

Table 13.2.5-3 - Subarea Distribution for regimes of u_s/u_r

Active	Surface Area	Pile Subarea	% of Pile Surface	Area
	566,280.00 ft ²	0.2a	5	
	52,609.13 m ²	0.2b	2	0.2 18939.29
		0.2c	29	0.6 26304.57
		0.6a	26	0.9 7365.28
		0.6b	24	
		0.9	14	

Threshold Friction Velocity = 1.02

<http://www5.ncdc.noaa.gov/documentlibrary/pdf/wind1996.pdf>

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Huron	DIR NW	NW	NNW	NNW	NW	NW	N	N	SSE	SSE	SSE	SSE	SSE
SPD	12	11	13	13	13	11	11	11	11	11	12	11	12
mph	56	62	55	64	60	63	82	76	54	52	58	60	82
m/sec	25.20	27.90	24.75	28.80	27.00	28.35	36.90	34.20	24.30	23.40	26.10	27.00	36.90

Annual Peak Gust Analysis

Wind Speed	0.2	0.6	0.9
36.90	0.74	2.21	3.32
$u^* - u_t^*$ (m/s)	P (g/m ² /yr)	Area (m ²)	E (g/yr)
0.00	0.00	18939.29	0.00
1.19	112.54	26304.57	1480117.04
2.30	364.61	7365.28	1342733.97
		2822851.01	423,427.65 g/yr
		6223.22	933.48 lb/yr
		3.11	0.47 tpy

Input Values in Green Highlighted Cells.

$$u_s^+ = u_{10}^+ \frac{u_s}{u_r}$$

For this pile, use Pile B1 from Figure 13.2.5-2

Table 13.2.5-3 - Subarea Distribution for regimes of u_s/u_r

Active	Surface Area	Pile Subarea	% of Pile Surface	Area
	5,000.00 ft ²	0.2a	5	
	464.52 m ²	0.2b	2	0.2 167.23
		0.2c	29	0.6 232.26
		0.6a	26	0.9 65.03
		0.6b	24	
		0.9	14	

Threshold Friction Velocity = 0.62

<http://www5.ncdc.noaa.gov/documentlibrary/pdf/wind1996.pdf>

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Huron	DIR NW	NW	NNW	NNW	NW	NW	N	N	SSE	SSE	SSE	SSE	SSE
SPD	12	11	13	13	13	11	11	11	11	11	12	11	12
mph	PGU 56	62	55	64	60	63	82	76	54	52	58	60	82
m/sec	PGU 25.20	27.90	24.75	28.80	27.00	28.35	36.90	34.20	24.30	23.40	26.10	27.00	36.90

Annual Peak Gust Analysis

Wind Speed	0.2	0.6	0.9
36.90	0.74	2.21	3.32
$u^* - u_t^*$ (m/s)	P (g/m ² /yr)	Area (m ²)	E (g/yr)
0.12	3.76	167.23	314.18
1.59	187.22	232.26	21741.46
2.70	490.66	65.03	15954.28
			PM2.5
			E (g/yr)
			47.13
			3,261.22
			2,393.14
			38009.92
			5,701.49 g/yr
			83.80 lb/yr
			0.04 tpy

Input Values in Green Highlighted Cells.

$$u_s^+ = u_{10}^+ \frac{u_s}{u_r}$$

For this pile, use Pile B1 from Figure 13.2.5-2

Table 13.2.5-3 - Subarea Distribution for regimes of u_s/u_r

Active	Surface Area	Pile Subarea	% of Pile Surface	Area
	522,720.00 ft ²	0.2a	5	
	48,562.28 m ²	0.2b	2	0.2 17482.42
		0.2c	29	0.6 24281.14
		0.6a	26	0.9 6798.72
		0.6b	24	
		0.9	14	

Threshold Friction Velocity = 1.02

<http://www5.ncdc.noaa.gov/documentlibrary/pdf/wind1996.pdf>

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Huron	DIR NW	NW	NNW	NNW	NW	NW	N	N	SSE	SSE	SSE	SSE	SSE
SPD	12	11	13	13	13	11	11	11	11	11	12	11	12
mph	PGU 56	62	55	64	60	63	82	76	54	52	58	60	82
m/sec	PGU 25.20	27.90	24.75	28.80	27.00	28.35	36.90	34.20	24.30	23.40	26.10	27.00	36.90

Annual Peak Gust Analysis

Wind Speed	0.2	0.6	0.9
36.90	0.74	2.21	3.32
$u^* - u_t^*$ (m/s)	P (g/m ² /yr)	Area (m ²)	E (g/yr)
0.00	0.00	17482.42	0.00
1.19	112.54	24281.14	1366261.88
2.30	364.61	6798.72	1239446.74
			2605708.63
			5744.51
			2.87
			390,856.29 g/yr
			861.68 lb/yr
			0.43 tpy

Cooling Tower

Tower Circulation Rate = 312,540 gallons per minute
 Tower Drift Efficiency = 0.0005%
 Water loss due to drift (tower total) = 1.56 gallons per minute
 Total Dissolved Solids = 6,000.00 ppm
 Water density = 8.34 pounds per gallon

Pounds of water lost due to drift = 13.03 pounds per minute

0.006 pounds solids per pound water
 0.078 pounds particulate per minute
 4.69 pounds per hour - entire tower
 0.250 lb/MMGal cooled

Cells = 18

uncontrolled
 205.50 tpy

Cooling Tower (Label = O)		
	18 cells	
Tower Circulation Rate	312,540.00	gpm
Tower Drift Efficiency	0.00050%	%
Total Dissolved Solids	6,000.00	ppm
Exhaust Flow From Each Cell	2,032,189	acfm
Exhaust Temp	61	F
Cell Diameter	33	ft
Exhaust velocity (fps)	39.60	fps

Emission Point	lb/hr/cell	
NewCell1	0.26065836	1
NewCell2	0.26065836	2
NewCell3	0.26065836	3
NewCell4	0.26065836	4
NewCell5	0.26065836	5
NewCell6	0.26065836	6
NewCell7	0.26065836	7
NewCell8	0.26065836	8
NewCell9	0.26065836	9
NewCell10	0.26065836	10
NewCell11	0.26065836	11
NewCell12	0.26065836	12
NewCell13	0.26065836	13
NewCell14	0.26065836	14
NewCell15	0.26065836	15
NewCell16	0.26065836	16
NewCell17	0.26065836	17
NewCell18	0.26065836	18